



BD Life Sciences Integrated Diagnostic Solutions Specimen Management

Product catalogue



Table of contents

About BD	4
The history of BD Vacutainer® System	6
Patient Safety	8
Sample management and analysis	8
BD Professional Services	10
BD Specimen collection portfolio	11
Towards Total Testing Process management solution: BD-Inpeco digital platform	12
Blood Stream Infection management	14
BD Widerlab™ TII - Time & Temperature	16
Venous blood sampling	18
Order of draw and specimen handling	18
Blood culture systems	19
Coagulation analysis	20
Serum analysis	22
Plasma analysis	27
Glucose analysis	31
Haematology	32
Speciality tubes	34
ESR	36
Cell and biomarker preservation	37
Blood collection devices and accessories	44
Safety Blood Collection Sets	44
Safety Blood Collection Needles	55
Blood Collection Needles	53
Adapters, holders and stretch tourniquets	54
Capillary blood sampling	56
BD Critical Care Collection Syringes	60
Urine collection products	62
Transport	65
Patient Safety Bibliography	67
BD Vacutainer® Blood Collection Tubes	69
Tube build up, dimensions and sample volumes	70
Labelling and packaging information	71
Additional information	73
Product quality statement	74
Country contact details	75

About BD

BD is one of the largest global medical technology companies in the world and is advancing the world of health by improving medical discovery, diagnostics and the delivery of care. The company supports the heroes on the frontlines of healthcare by developing innovative technology, services and solutions that help advance both clinical therapy for patients and clinical process for healthcare providers. BD and its 65,000 employees have a passion and commitment to help enhance the safety and efficiency of clinicians' care delivery process, enable laboratory scientists to accurately detect disease and advance researchers' capabilities to develop the next generation of diagnostics and therapeutics. BD has a presence in virtually every country and partners with organisations around the world to address some of the most challenging global health issues. By working in close collaboration with customers, BD can help enhance outcomes, lower costs, increase efficiencies, improve safety and expand access to healthcare. In 2017, BD welcomed C. R. Bard and its products into the BD family. For more information on BD, please visit bd.com.



Focus on creating shared value

Our sustainability strategy focuses on unmet social and environmental needs

Through the BD 2020 sustainability goals, we actively contribute to local and global efforts to address challenges facing the healthcare industry, society at large and the planet. These goals are divided into four key areas: innovation, access, efficiency and empowerment.



Healthcare safety, outcomes and cost

- Innovate key healthcare processes such as medication management and lab automation
- Develop innovations and informatics to enable disease management across the care continuum
- Enable the transition from research into clinical practice
- Provide solutions that improve healthcare worker and patient safety



Healthcare in resource-limited populations

- Develop low-cost innovations to address leading causes of mortality and morbidity
- Collaborate on health system strengthening with leading agencies and non-governmental organisations
- Further expand BD manufacturing, product array and employment in emerging countries



Environmentally sound products and resilient operations

- Reduce greenhouse gas emissions
- Eliminate priority materials of concern
- Minimise environmental footprint in manufacturing
- Drive supplier responsibility evaluation methodology
- Improve life cycle impacts of products



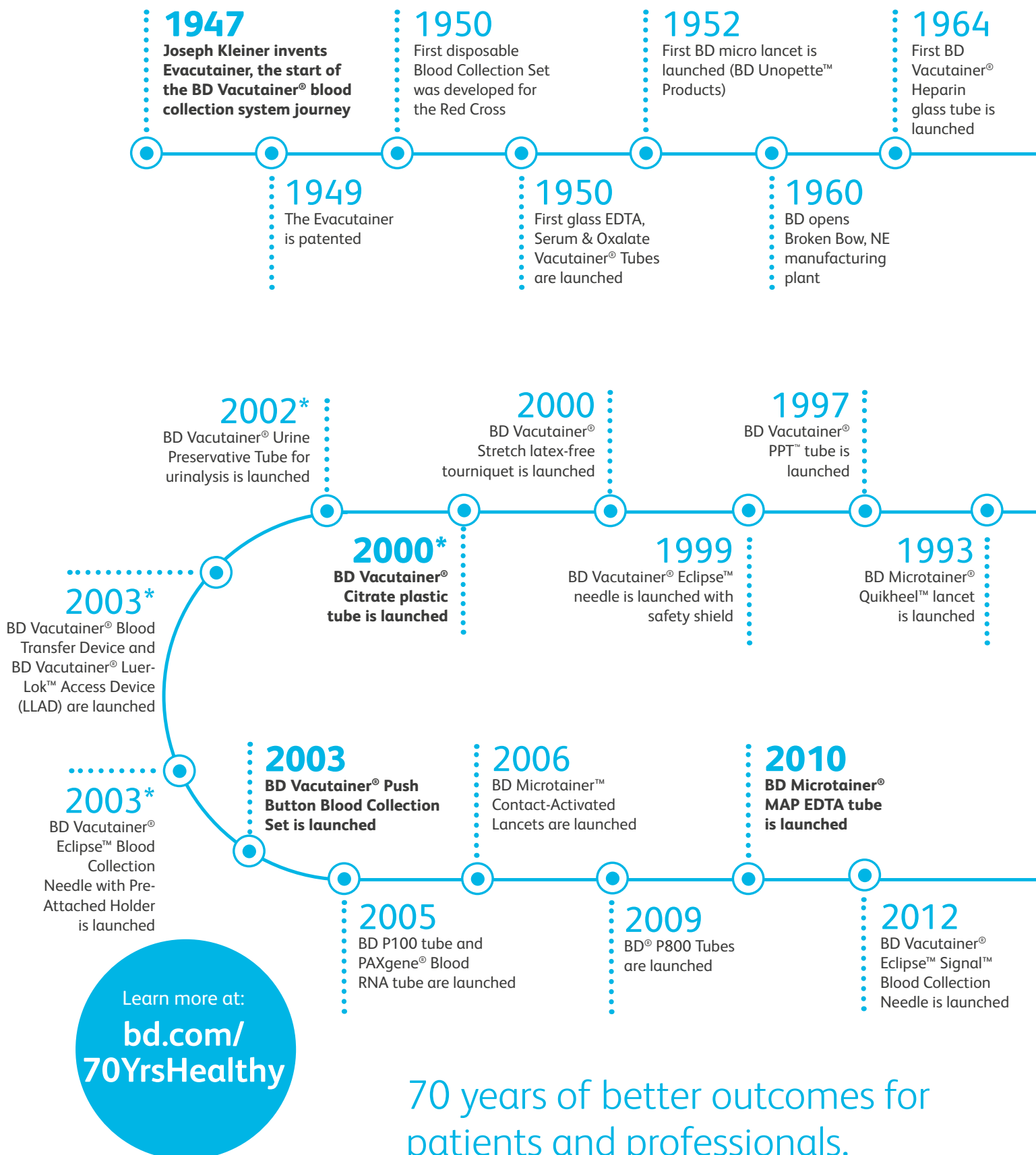
Positive workforce and community

- Increase the diversity of our workforce, particularly in leadership roles
- Achieve best-in-class associate safety performance
- Drive social impact and associate engagement through volunteer programs
- Partner with non-profits

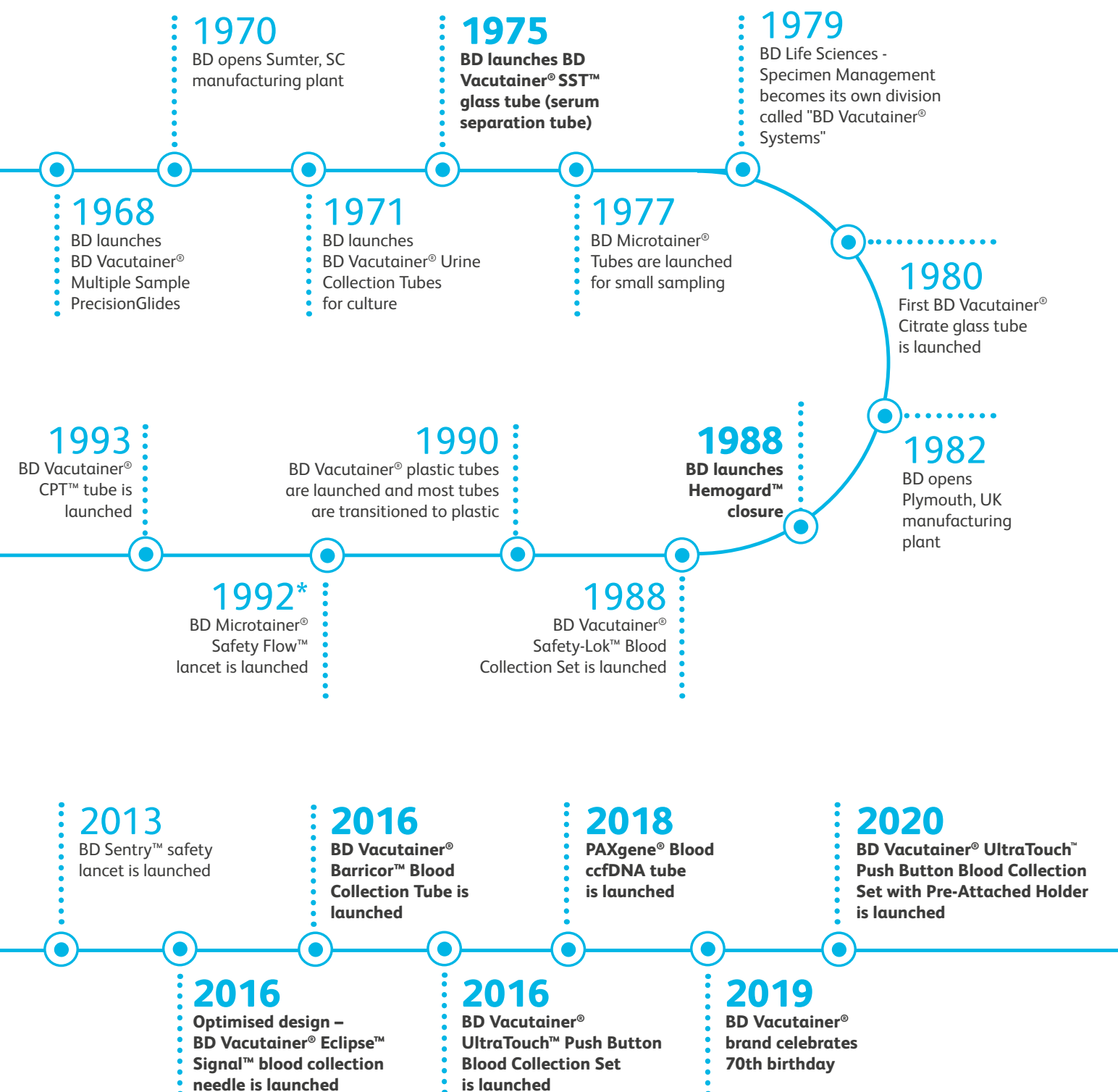


Find out more about our sustainability goals at:
bd.com/en-us/company/sustainability-at-bd

BD Vacutainer® System – A story of innovation



The BD Vacutainer® family of solutions focuses on delivering diagnostic accuracy, specimen integrity and quality, a safe environment for patient and healthcare professionals, reduced patient pain, and total cost of ownership.



Thank you for trusting the BD Vacutainer® brand to enable accurate diagnostics that shape the course of care.

Patient Safety

Sample management and analysis

Driving safe and accurate sample management and analysis throughout the patient journey

Did you know the majority of laboratory errors occur during the preanalytical phase?¹

"The most commonly performed invasive medical procedure is wreaking havoc on how patients are being diagnosed, medicated and managed."

Dennis J. Ernst, Director of the Center for Phlebotomy Education

A large proportion of clinical decisions are based on laboratory data. Because of this, laboratory errors have a major impact on the diagnostic and treatment pathways.¹

About 2/3

of laboratory errors occur during the preanalytical phase²

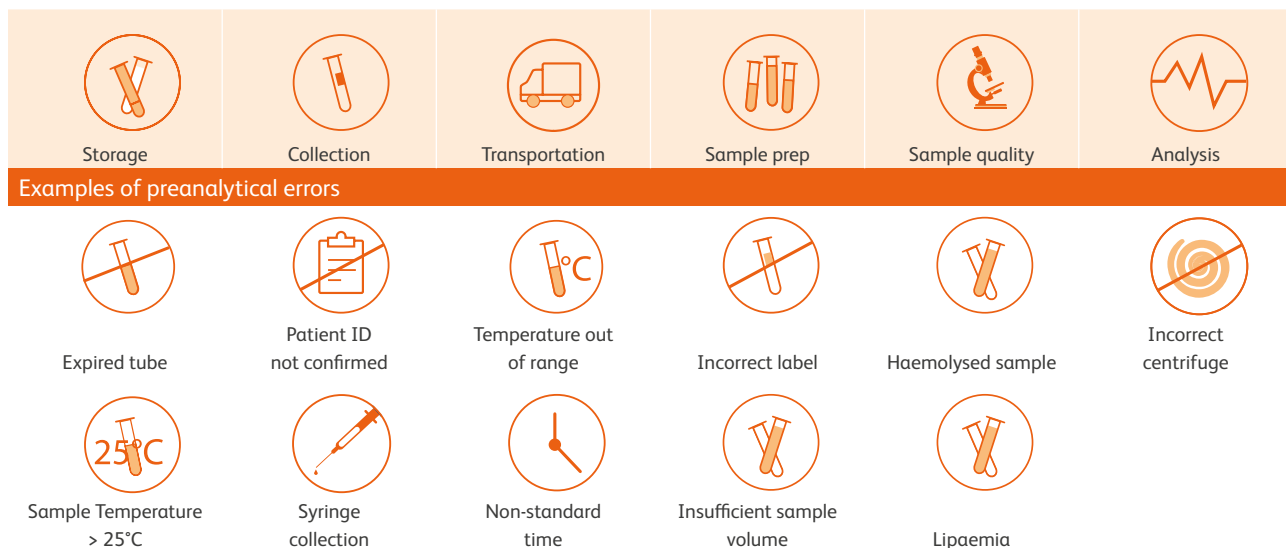
Estimated

90%-96%⁴

diagnostic delays are associated with error in preanalytical phase⁵

The preanalytical phase, step by step

Preanalytical errors can occur at any step during the process



Poor sample quality contributes to errors² that may:

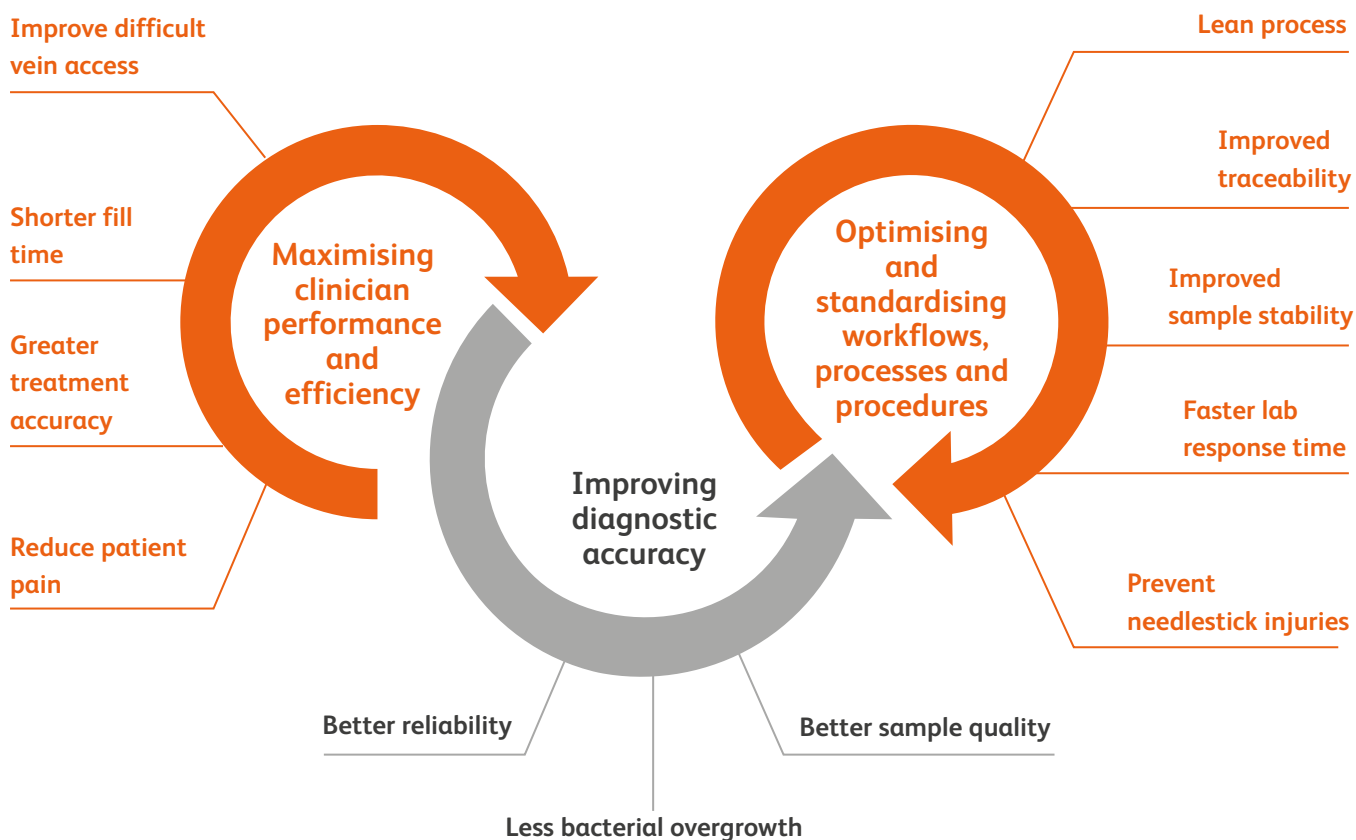
- > cause unnecessary patient suffering³
- > impact clinical outcomes⁵
- > affect compliance to regulatory standards

3-12 %
of hospital laboratory
errors lead to adverse
events³

**Most people
will suffer
a diagnostic
error in their
lifetime⁶**

2 days
Increased median
length of stay for patients
with a contaminated
blood culture⁷

Impacting patient safety by maximising, improving and standardising sample management and analysis



Patient Safety

BD Professional Services

A range of services that will help you achieve your key performance goals

A large proportion of medical diagnoses are based on the results of laboratory tests¹.

Over 60% of laboratory errors occur during the preanalytical phase² and around 24% of these errors have a negative impact on patient care



Ask your local BD representative for further information and BD Services catalogue, available upon request.

BD specimen collection portfolio

The BD portfolio offers a comprehensive range of products that enhances patient and healthcare worker safety through better specimen collection in the preanalytical phase



BD Innovative Solutions:

Specifically designed to meet emerging clinical and diagnostic needs.



BD Vacutainer® Venous Blood Collection System:

Full range of tubes and venous access devices to meet any laboratory and patient population needs.



BD Microtainer® Capillary Collection System:

A complete solution designed and developed for your most fragile patients.



BD Arterial Blood Collection System:

Provide clinically superior and safe solutions to standardise collection of arterial samples dedicated to Critical Care Panel testing.



BD Vacutainer® Closed Urine Collection System:

Reduces mixed growth and contaminated samples saving costs, time and diagnostic and treatment delays.

BD Vacutainer® Evacuated Blood Collection System

The BD Vacutainer® blood collection system is a closed evacuated system, which consists of BD Vacutainer® Tubes, Needles and Holders being used together as a system for the collection of venous blood.



- CE marked to reflect **compliance to the applicable directives**
- **Reproducible** blood draw volume with each tube having a predetermined vacuum
- Comprehensive range of additives to **stabilise** most blood components
- BD Hemogard™ **safety** closure provides optimal protection for users from blood exposure
- **Sterile** tube and needle ensure no microbiological contamination of samples
- A range of labels to ensure **traceability** of collected patient samples

Please refer to page 67 for full list of references

Patient Safety

Towards Total Testing Process management solution: BD-Inpeco digital platform

It is critical for the future of laboratory medicine to continuously improve efficacy and efficiency in line with growing demand and fixed or decreasing resources. Despite many similarities with industrial processes, laboratory medicine's purpose is significantly different due to the diversity of results provided, which are extremely valuable across the healthcare continuum as each patient is unique.

If properly remodeled, many industrial strategies can be applied to the laboratory medicine process to overcome the increasing challenge of “doing more and better with fewer resources” without altering the mission of the laboratory.

BD and Inpeco are joining their efforts to bring to your organization a state-of-the-art monitoring system for the preanalytical process, which can drive the implementation of continuous improvement programs. Stakeholders along the process will have detailed visibility of their relevant indicators. The Automated Data Capturing technology populates customisable dashboards while leading the process deployment avoiding human errors and recording events.

Lean and Six Sigma

Process optimisation approaches that have the potential to deliver improved process performance within the boundaries imposed by the limited resources available. Essential to apply these strategies is the capability to measure the performance of the process.



Right patient



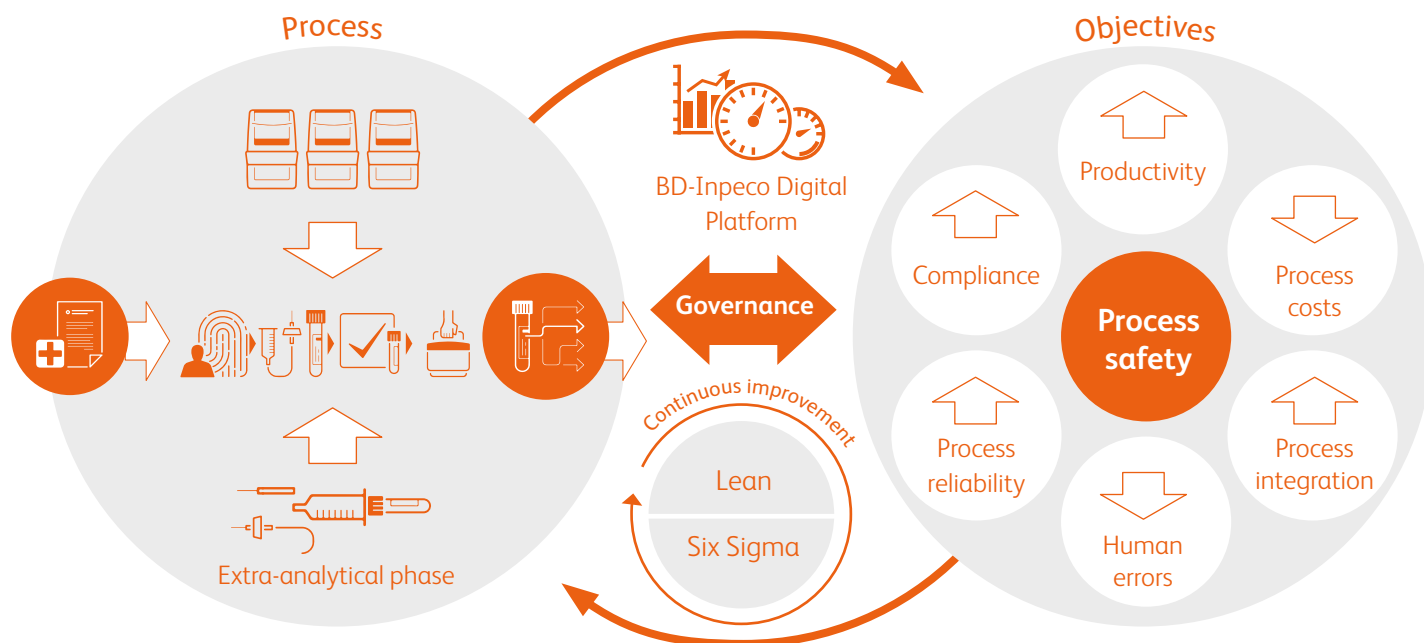
Right governance



Right specimen



Right time



BD-Inpeco solution is:



Composed of hardware and software components distributed where the specimen collection process takes place. The system is then coordinated and controlled through the connectivity of each station.



Adaptive to reflect the environment in which it operates and to be integrated in the hosting environment.



Open, enabling multiple connections to collect data from other systems to generate actionable information.



Scalable to expand or contract according to the process demand, and can provide results in-line with the invested resources.



Sustainable, so it ensures and measures the balance between the delivered results and the invested resources.

Contact your local BD representative to start the journey towards a more efficient and reliable specimen collection process impacting everyone along the total testing process:



Nurses and phlebotomists

Process guidance and support
Focus primarily on patients



Laboratory

Process monitoring
Actionable information



Patient

Safety through robust identification
Reliable diagnostic results

Patient Safety

Bloodstream Infection Management solution: enabling better specimen management and diagnostics throughout the complete analytical pathway

BD builds on its preanalytical expertise to offer an effective analytical, and postanalytical solution for Bloodstream Infection Management, including both clinical and technical elements that increase value for customers around the world.

The BD Bloodstream Infection Management solution enables better patient and user experience at the point of collection,¹ optimises volume of specimen for accurate diagnostics,² point of care facilitation for earlier decision making,⁴ and diagnostic workflow with microbiology informatics.

We operate in the key areas to maximise your clinical performance and efficiency, enhance diagnostic accuracy and timeliness, and optimise and standardise workflows, processes and procedures.

Why volume of blood cultured is important to the yield of pathogens.⁵

For the purpose of isolating pathogenic germs, it has been demonstrated that the volume of blood sampled is the most determinant variable on adult patients with bacteraemia and fungaemia. It has been demonstrated that an increase in the volume of blood from 20 to 40 mL (2 to 4 blood culture vials) for culture increases the diagnostic yield by 19%, and an increase to between 40 and 60 mL leads to a further increase of 10% (simultaneously or a series of samples)⁶ within 24 hours⁶. In addition the correct volume in each blood culture vial will decidedly improve diagnostic results⁷⁻¹² and as a whole ensure greater clinical impact throughout the patient pathway.

84%
of blood vials are
NOT optimally
filled⁷

Volume of blood
collected is the single
most important
factor in recovery of
causative
organism⁸

Specimen
volume is critical^{9,10}
Over-filling can lead
to false positives¹¹

Under-filling
leads to low
detection
of bacteria⁹



Please refer to page 67 for full list of references used on page 14 and 15

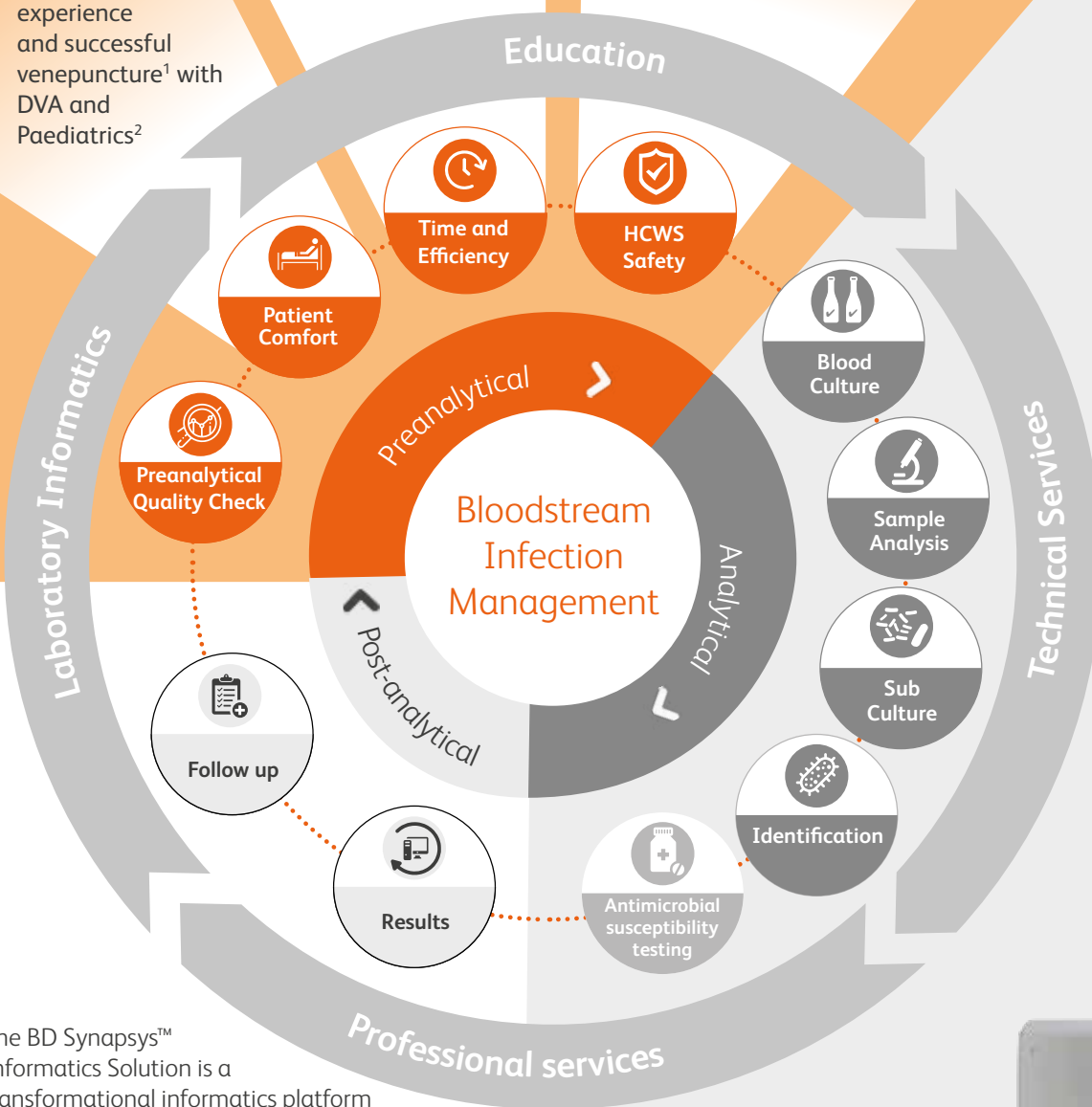


BD Vacutainer® UltraTouch™ Push Button Blood Collection Set can show improvements in specimen volume and collection time³



Proven healthcare worker safety technology¹²

Improve patient experience and successful venepuncture¹ with DVA and Paediatrics²



The combination of BD BACTEC™ Plus Aerobic and Lytic Anaerobic media has been shown to reduce time to positivity, resulting in a decreased length of stay and significant improvement in mortality rates¹³

The BD Synapsys™ Informatics Solution is a transformational informatics platform providing secure connectivity, integrated workflows, and on-demand actionable insights, all accessible anytime, anywhere.

Through real-time analytics, accessible by the ED, measure and drive continuous improvements efforts in blood collection practices to impact turnaround time, expedite decision-making, improve productivity, and simplify compliance.



The small footprint of the BD BACTEC™ FX40 instrument allows for on-site incubation that minimises the time to a positive microbiological result⁴ promoting optimal patient management with both faster results and treatment.

BD Widerlab™ TII - Time & Temperature tracks time and temperature during transport





BD Widerlab™ TII - Time & Temperature tracks time and temperature at pre-determined time intervals. It is a highly automated solution that does not require intervention from healthcare providers. It helps reduce the incidence of preanalytical errors, ensure patient safety and improve efficiency.

This solution uses radio-frequency identification technology to monitor temperature at pre-determined intervals from sample dispatch to sample reception

It can be fully adapted as per the laboratory workflow. BD understands preanalytical processes and partners with clinical laboratories across Europe.



BD Widerlab™ TII - Time & Temperature

-  Accurately monitors temperature and time during sample transport
-  Measures temperature to help stay compliant
-  Optimises your workflow for reduced laboratory turnaround time and less hands-on time
-  Software provides automated and quick updates of sample time and temperature

Several collection sites



RFID Tag

Sample collection sites



RFID Tag

In transit



RFID Tag

Clinical laboratory

RFID Tag



Accurate
time and
temperature data
measurement

Antenna



RFID tag and
transport box
identification

Signal
receiver



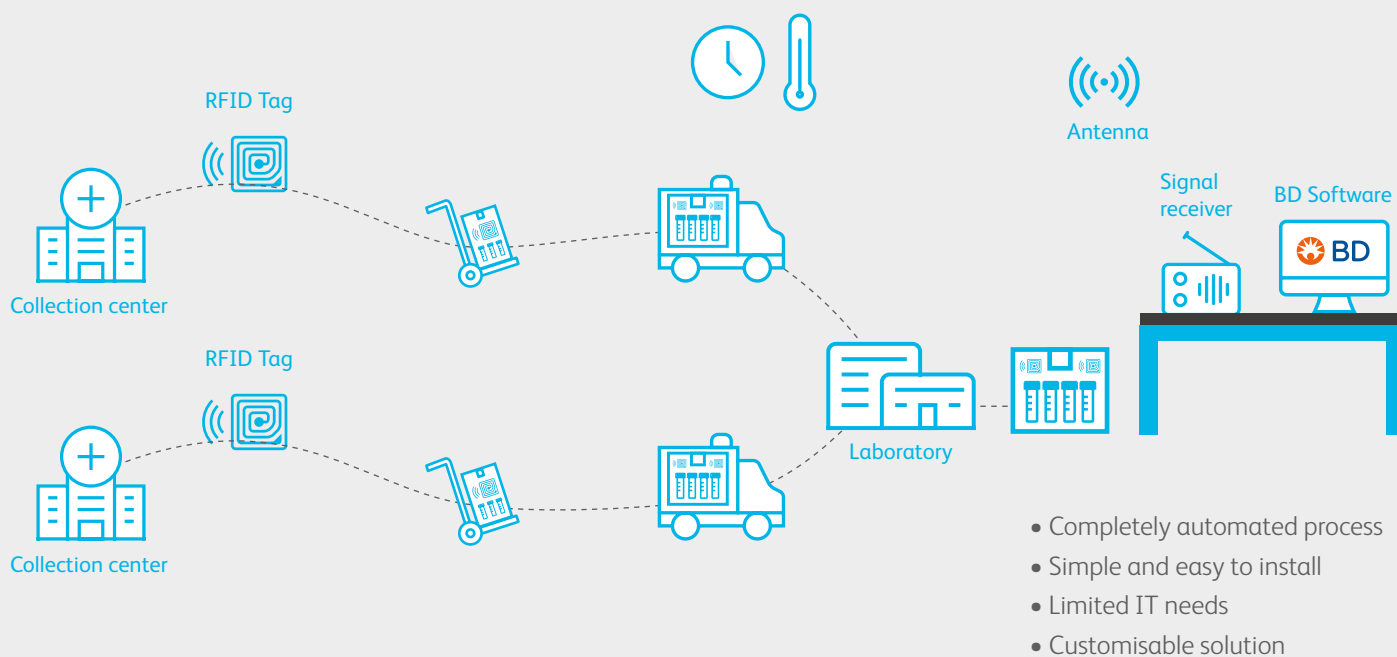
Adaptable to
laboratory
workflows

BD Software



Large memory capacity
Automated data download
Personalised reports in Excel
or PDF format
Data stored on your server

Solution overview



The RIGHT
collection...

...with the RIGHT
transport...




...during the
RIGHT time...

...at the RIGHT
temperature...























...for the RIGHT
analysis.

Venous blood sampling

Order of draw and specimen handling

Order of draw ¹	Colour code	Tube type	OR	Order of draw ¹	Colour code	Tube type
Discard tubes		EST or other suitable tube*		Blood culture	 	Aerobic blood culture bottle Anaerobic blood culture bottle



Order of draw ¹	Colour code	Tube type	Recommended inversions	Clotting time	Centrifugation conditions
Coagulation		Sodium citrate, plastic	3-4	n/a	2000-2500 g (RCF) for 10-15 min. at 18-25 °C ² or 3000 g (RCF) for 5 min. for some tests ⁴
Serum		Serum with clot activator (silica particles)	5-6	60 min.	≥1300 g (RCF) for 10 min. at 18-25 °C or 3000 g (RCF) for 5 min. for some tests ⁴
		Serum thrombin	5-6	5 min.	≥1300 g (RCF) for 10 min. at 18-25 °C
		BD RST (serum thrombin with gel)	5-6	5 min.	4000 g (RCF) for 3 min. or 2000 g (RCF) for 4 min. or alternative centrifugation conditions are available ^{3,4}
		BD SST™ II Advance (serum with gel)	6	30 min.	1300-2000 g (RCF) for 10 min. or 3000 g (RCF) for 5 min. at 18-25 °C ³
Heparin		BD Barricor™	8-10	n/a	4000 g (RCF) for 3 min or alternative centrifugation conditions are available ^{3,4}
		Lithium & sodium heparin	8-10	n/a	≤1300 g (RCF) for 10 min. at 18-25 °C or 3000 g (RCF) for 5 min. for some tests ⁴
		BD PST™ II (plasma with gel)	8-10	n/a	1300-2000 g (RCF) for 10 min. or alternative centrifugation conditions are available ^{3,4}
Haematology		EDTA	8-10	n/a	≤1300 g (RCF) for 10 min. at 18-25 °C
Nucleic acid		PAXgene® DNA	8-10	n/a	n/a
Crossmatch		Blood banking	8-10	n/a	≤1300 g (RCF) for 10 min. at 18-25 °C
PPT		BD PPT™ EDTA with gel	8-10	n/a	1100 g (RCF) for 10 min. at 18-25 °C
Glucose		Glucose	8-10	n/a	≤1300 g (RCF) for 10 min. at 18-25 °C or 3000 g (RCF) for 5 min. for some tests ⁴
Citrate		Sodium citrate, ESR, glass	8-10	n/a	n/a
		ACD	8-10	n/a	n/a
Trace elements		Trace elements with EDTA	8-10	n/a	≤1300 g (RCF) for 10 min. at 18-25 °C
		Trace elements serum with clot activator (silica particles)	5-6	60 min.	≤1300 g (RCF) for 10 min. at 18-25 °C
PBMC		BD CPT™ Sodium Citrate & Sodium Heparin	8-10	n/a	Citrate tube 1500-1800 g (RCF) for 20 min. at 18-25 °C Heparin tube 1500-1800 g (RCF) for 15 min. at 18-25 °C
Peptides		BD™ P800	8-10	n/a	2mL tube: 1100-1300g (RCF) for 10 min. at 18-25 °C 8,5mL tube: 1100-1300g (RCF) for 20 min. at 18-25 °C
Proteins		BD™ P100	8-10	n/a	2mL tube: 1000-3000g (RCF) for 10 min. at 18-25 °C 8,5mL tube: 2500g (RCF) for 20 min. at 18-25 °C
Circulating, cell-free DNA		PAXgene® Blood ccfDNA tube	8	n/a	1900 g (RCF) for 15 min. at 15-25 °C for further sample purification see IFU
Nucleic acid		PAXgene® Blood RNA tube	8-10	n/a	n/a

* Discard tube is not required before blood collection for Anaerobic and Aerobic blood culture bottles.

n/a = not applicable

Centrifugation acceleration and deceleration time is not included, this must be added to the time stated. For fixed angle rotors, a longer centrifugation time may be required for the optimal development of the gel barrier.

- Sequence for sample taking according to Clinical and Laboratory Standards Institute (CLSI): Collection of Diagnostic Venous Blood Specimens, 7th Edition, CLSI document GP41-Ed7 (ISBN 1-56238-812-6). Clinical and Laboratory Standards Institute, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898 USA, 2017
- Platelet-poor plasma (< 10,000 Plt/μL)
- BD White Paper VS7228: Performance of BD Vacutainer® SST™ II Advance Tubes at Four and Five Minute Centrifugation Times, 2004
- BD White Paper VS9387-0US: Evaluation of Unified Centrifugation Conditions for a Range of BD Vacutainer® Blood Collection Tubes, 2018

Venous blood sampling

Blood culture systems

BD BACTEC™ Media

BD, a leader in blood collection and blood culture for more than 40 years, offers clinicians and microbiology laboratories a unique, unmatched range of solutions providing:

- Safe specimen collection and transport
- Compatible, high-performing diagnostic systems
- Tools for active and real-time reporting
- High-quality training and support



Cat. no.	Draw volume (mL)	Size (mm)
442017	BD Bactec™ Plastic Mycosis Ic/F Culture Vials	50 vials
442020	BD Bactec™ Plastic Bactec Peds Plus/F	50 vials
442021	BD Bactec™ Plastic Lytic/10 Anaerobic/F Culture Vials	50 vials
442022	BD Bactec™ Plastic Bactec Plus Anaerobic/F Cultural Vials	50 vials
442023	BD Bactec™ Plastic Bactec Plus Aerobic/F Culture Vials	50 vials
442027	BD BACTEC™ Standard/10 Aerobic/F Culture Vials	50 vials
442288	BD Bactec™ Glass Myco/F Lytic Culture Vials (for Mycobacterial use)	50 vials

Venous blood sampling

Coagulation analysis

Sodium citrate

Trisodium citrate is used as an anticoagulant for coagulation investigations. It works as an anticoagulant by forming complexes with metal ions such as calcium, thereby inhibiting the coagulation cascade. Anticoagulation with trisodium citrate is reversible.

BD Vacutainer® citrate tubes contain buffered trisodium citrate in accordance with recommendations:

- 0.105 M or 0.109 M of buffered trisodium citrate solution, equivalent to 3.2% trisodium citrate
- 0.129 M of buffered trisodium citrate solution, equivalent to 3.8% trisodium citrate

The blood to additive ratio is 9:1.

BD Vacutainer® citrate tubes are also suitable for carrying out special test procedures such as the platelet function assay PFA-100®*.

Fill line marking

The significance of the correct ratio of blood to additive for coagulation samples is well documented. The correct fill amount is critical for correct coagulation analysis. All BD Vacutainer® plastic coagulation tubes have a mark indicating the minimum fill level.

Glass tubes

All BD Vacutainer® glass coagulation tubes have specialised internal silicone coating to minimise contact activation.

BD Vacutainer® plastic (PET/PP) citrate tubes

The plastic citrate tubes made from polyethylene terephthalate (PET) and polypropylene (PP) feature innovative tube geometry that minimises tube headspace and associated platelet activation to optimise activated partial thromboplastin time (APTT) monitoring of unfractionated heparin patients.

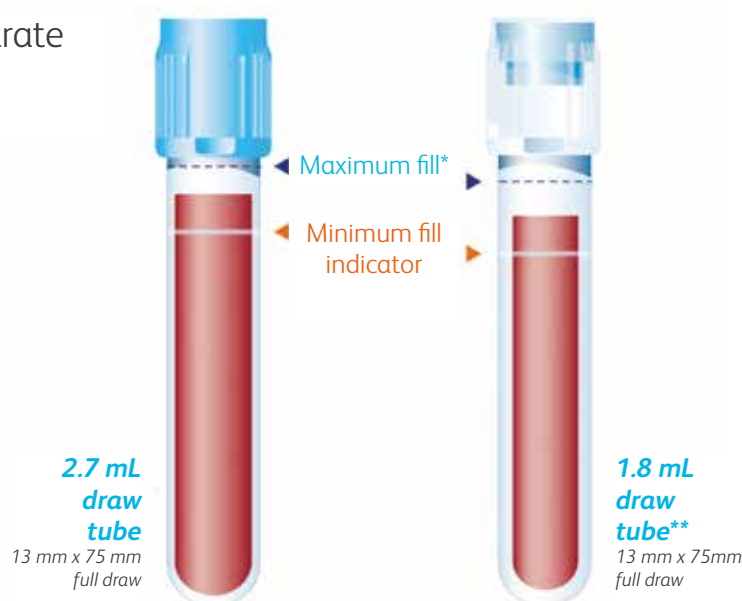
BD Vacutainer® citrate tubes combine the following advantages:

- Clinically equivalent performance to the recognised global “Gold Standard”: the 4.5 mL BD Vacutainer® glass buffered citrate tube^{1,2}.
- Clinically proven in multi-centre clinical trials for coagulation testing across all major patient populations.
- Evaluated with the most widely used coagulation analytical systems.

BD Vacutainer® Plastic Citrate Tube draw volume guide

Note: The quantity of blood drawn into evacuated tubes varies with altitude, ambient temperature, barometric pressure, tube age, venous pressure and filling technique.

*According to CLSI Guideline, Dec 2010, Doc. GP39-A6 (replaces H01-A6)



* PFA-100 is a registered trade mark of Siemens.

** not available in The Netherlands

1. BD Ref. VS5936: Evaluation of BD Vacutainer® Plus 2.7 and 1.8mL Sodium Citrate Coagulation Tubes Using The ELECTRA 1400cTM Analyser. BD, Franklin Lakes, NJ, USA, 2004
2. BD Ref. VS5966: Evaluation of 0.109M BD Vacutainer® Plus Plastic and 0.105M BD Vacutainer® Glass Sodium Citrate Tubes for PT and APTT Using the Sysmex CA - 1500 Analyzer. BD, Franklin Lakes, NJ, USA, 2002
3. BD Ref. VS9396: Comparison of BD Vacutainer® Sodium Citrate Tubes with Two Rubber Stopper Formulations for PT/INT, APTT, and Anti-Xa. BD, Franklin Lakes, NJ, USA, 2020
4. BD Ref. VS9395: Comparison of BD Vacutainer® Sodium Citrate Tubes with Two Rubber Stopper Formulations for PT/INT. BD, Franklin Lakes, NJ, USA, 2020

Venous blood sampling

Coagulation analysis

Centrifugation conditions


For coagulation analyses, different plasma specifications can be obtained from the citrated blood:

- Platelet-rich plasma:
150-200 g for 5 minutes at 18-25°C
- Platelet-poor plasma:
Plastic tubes: 2,000-2,500 g for 10-15 minutes at 18-25°C
Glass tubes: 1,500 g for 15 minutes at 18-25°C
- Platelet-free plasma:
> 3,000 g for 15-30 minutes at 18-25°C











BD recommends that glass tubes are not centrifuged at more than 2,200 g in a swing-out rotor (for fixed angle rotor not more than 1,300g).



BD Vacutainer® Citrate Tubes available in The Netherlands

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
363046*	2.7	13 x 75	Trisodium citrate (0.109 M, 3.2%)	None	PET/PP	USI	BD Hemogard™	

BD Vacutainer® Citrate Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
363047	1.8	13 x 75	Trisodium citrate (0.109 M, 3.2%)	None	PET/PP	Paper	BD Hemogard™	
363097	1.8	13 x 75	Trisodium citrate (0.129 M, 3.8%)	None	PET/PP	Paper	BD Hemogard™	
368273	1.8	13 x 75	Trisodium citrate (0.109 M, 3.2%)	None	PET/PP	See thru	BD Hemogard™	
363048	2.7	13 x 75	Trisodium citrate (0.109 M, 3.2%)	None	PET/PP	Paper	BD Hemogard™	
363046*	2.7	13 x 75	Trisodium citrate (0.109 M, 3.2%)	None	PET/PP	USI	BD Hemogard™	
363079	2.7	13 x 75	Trisodium citrate (0.129 M, 3.8%)	None	PET/PP	Paper	BD Hemogard™	
364305	2.7	13 x 75	Trisodium citrate (0.109 M, 3.2%)	None	PET/PP	See thru	BD Hemogard™	
367714	4.5	13 x 75	Trisodium citrate (0.105 M, 3.2%)	None	Glass	Paper	BD Hemogard™	
367704	4.5	13 x 75	Trisodium citrate (0.129 M, 3.8%)	None	Glass	Paper	BD Hemogard™	
366575	6.0	13 x 100	Trisodium citrate (0.105 M, 3.2%)	None	Glass	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

* Low Mg

Venous blood sampling

Serum analysis

Serum Tubes

Serum tubes are available in glass and plastic (PET) variants. In glass tubes, the surface acts as a clot activator. In plastic tubes, silica particles are added as the clot activator. These tubes are labelled with the acronym CAT (clot activator tube).

Clotting times

The recommended minimum clotting time for the serum tubes is 60 minutes.

Centrifugation conditions










≤ 1,300 g for 10 minutes at 18-25°C or
3000 g for 5 minutes¹

Further information

Clinical and technical information is available on request.



BD Vacutainer® Serum Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
368492	2.0*	13 x 75	Silica (clot activator)	None	PET	Paper	BD Hemogard™	
368271	2.0*	13 x 75	Silica (clot activator)	None	PET	See thru	BD Hemogard™	
369032	4.0	13 x 75	Silica (clot activator)	None	PET	Paper	BD Hemogard™	
365904	4.0	13 x 75	Silica (clot activator)	None	PET	See thru	BD Hemogard™	
367624	5.0	13 x 75	No additive	None	Glass	Paper	BD Hemogard™	
367614	5.0	13 x 75	Silicone coated	None	Glass	Paper	BD Hemogard™	
368815	6.0	13 x 100	Silica (clot activator)	None	PET	Paper	BD Hemogard™	
367819	6.0	13 x 100	Silica (clot activator)	None	PET	See thru	BD Hemogard™	
367896	10.0	16 x 100	Silica (clot activator)	None	PET	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

*Partial-draw tube

1. BD White Paper VS9387-OUS: Evaluation of Unified Centrifugation Conditions for a Range of BD Vacutainer® Blood Collection Tubes, 2018

Venous blood sampling

Serum analysis

BD Vacutainer® RST (Rapid Serum Tube)

This tube combines the advantages of a thrombin-based clot activator with a gel barrier, enabling rapid results and extended stability.

The main advantages of BD Vacutainer® Rapid Serum Tubes(RST) versus other tubes:

- High-quality serum production.¹
- Five-minute clotting time after the blood sample is taken.
- Reduced haemolysis, red cell hang-up and fibrin, compared to a comparator serum tube¹
- Stable barrier between serum and clotted blood during transportation and storage, therefore better analyte stability.
- Workflow optimisation: short centrifugation time, sample processing and archiving in the primary tube.

Clotting times

The minimum recommended clotting time for BD Vacutainer® Rapid Serum Tubes(RST) is 5 minutes.



Centrifugation conditions

4,000 g for 3 minutes at 23-27°C or
2,000 g for 4 minutes at 23-27°C or
1,500-2,000 g for 10 minutes at 23-27°C

Further information

Clinical and technical information is available on request.

BD Vacutainer® RST Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
368774	5.0	13 x 100	Thrombin-based medical clotting agent	Gel	PET	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

BD Vacutainer® Thrombin Tubes

The thrombin-based clot activator enables rapid clotting of the blood.

Clotting times

The minimum recommended clotting time for the thrombin tubes is 5 minutes.

Centrifugation conditions

≤ 1,300 g for 10 minutes at 18-25°C

BD Vacutainer® Thrombin Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
367811	6.0	13 x 100	Thrombin	None	PET	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

1. BD White Paper VS8133: Evaluation of Serum Quality in BD Vacutainer® Rapid Serum Tubes (RST) with BD Hemogard™ Closure, 2010

Venous blood sampling

Serum analysis

BD Vacutainer® SST™ II Advance Tubes

These tubes contain an inert gel barrier that separates the serum from the blood clot following centrifugation, preventing contamination of the serum. For example, in serum certain analytes such as potassium, phosphorus and glucose should be separated from the cells within a short time period - otherwise the results will be significantly impacted. Using BD SST™ II Advance tubes, routine analytes in clinical chemistry such as potassium are still stable after a week of storage at 2-8°C. Clinical evaluation of special chemistries such as therapeutic drugs, proteins, peptides, steroids and vitamins demonstrates a high degree of stability within the BD SST™ II Advance^{1,2,3}.

BD Vacutainer® SST™ II Advance tubes enable faster centrifugation times of 5 minutes at 3,000 g⁴.

The main advantages of gel tubes versus non-gel tubes are:

- Stable barrier between serum and clotted blood during transportation and storage, leading to better analyte stability.
- Better sample quality.
- Workflow optimisation: short centrifugation time, sample processing and archiving in the primary tube.
- No requirement for secondary tubes, reducing the possibility of misidentification.

Clotting times

The minimum recommended clotting time for BD Vacutainer® SST™ II Advance tubes is 30 minutes.

Centrifugation conditions

1,300-2,000 g for 10 minutes or alternatively, according to the BD studies 3,000 g for 5 minutes at 18-25°C⁴.



Storage conditions

BD Vacutainer® SST™ II Advance tubes should be stored at 4-25°C and protected from direct sunlight during storage. Cooling of the tube before or during centrifugation can affect the movement capability of the gel. The optimum separation of serum and coagulated blood is achieved at a temperature of 20-25°C.

Further information

Clinical and technical information is available on request.

**Enable faster
centrifugation
time**

5 min. at
3,000 g

1. BD White Paper VS7050: Therapeutic Drug Compatibility in BD Vacutainer® SST™ II Plus Tubes, 2004.












2. BD White Paper VS7051: Performance of BD Vacutainer® SST™ II Plus Tubes for Special Chemistry Testing, 2004.

3. BD White Paper VS5778: Comparison of BD Vacutainer® SST™ Plus Tubes with SST™ II Plus Tubes for Common Analytes, 2001.

4. BD White Paper VS7228: Performance of BD Vacutainer® SST II Advance tubes at Four and Five Minute Centrifugation Times, 2004.

Venous blood sampling

BD Vacutainer® SST™ II Advance Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additives	Separator	Material	Label	Cap closure	Cap colour
366882	2.5*	13 x 75	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
367957	3.5	13 x 75	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
368498	3.5	13 x 75	Silica (clot activator)	Gel	PET	See thru	BD Hemogard™	
368965	3.5	13 x 75	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
368966	3.5	13 x 75	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
368967	3.5	13 x 75	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
368879	4.0*	13 x 100	Silica (clot activator)	Gel	PET	See thru	BD Hemogard™	
367955	5.0	13 x 100	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
366566	5.0	13 x 100	Silica (clot activator)	Gel	PET	See thru	BD Hemogard™	
368968	5.0	13 x 100	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
368969	5.0	13 x 100	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
368970	5.0	13 x 100	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
366444	6.0*	16 x 100	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
367953	8.5	16 x 100	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	
366644	8.5	16 x 100	Silica (clot activator)	Gel	PET	See thru	BD Hemogard™	
366468	8.5	16 x 100	Silica (clot activator)	Gel	PET	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

* Partial-draw tube

Venous blood sampling

Serum

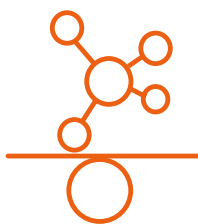
Turnaround time¹⁻²

Before centrifugation, serum samples require between 5 to 60 minutes to coagulate and several factors affect the process.



Sample quality³⁻⁸

- Serum is an acellular sample
- Coagulation processes increase the analytical variance
- Potassium levels are slightly elevated by the clotting process
- Long-term stability is high for the majority of analytes



Fibrin formation⁹

Inadequate clotting may result in fibrin formation during and after centrifugation, which may interfere with some tests.



Sample yield¹⁰

With serum samples, 44.3% of the draw volume can be harvested.



Plasma

Turnaround time¹⁻²

The anticoagulation action of heparin allows for immediate centrifugation of the specimen.

Sample quality³⁻⁸

- Plasma contain residual cells
- Analytical variance is reduced
- Potassium levels are unaffected by anticoagulation
- Analyte stability is often shorter than in serum samples

Fibrin formation⁹

Fibrin artefacts are generally not present in plasma samples. Cold storage can activate coagulation.

Sample yield¹⁰

With plasma samples, 55.2% of the draw volume can be harvested.

Serum or plasma? An old question waiting for new answers

"There is an ongoing debate on what type of sample a clinical laboratory should use. While serum is still considered the gold standard and remains the required sample matrix for some assays, laboratories must consider turnaround time, which is an important metric for laboratory performance and, more importantly, plays a critical role in patient care. In addition, a body of evidence emphasises the choice of plasma samples in order to prevent modifications of some measurements due to the coagulation process and related interferences. Advantages and disadvantages of serum and plasma are discussed on the basis of current literature and evidence. In addition, data are provided on the current utilisation of the matrix (serum or plasma) in Italy and in other countries. Finally, a rationale for a possible shift from serum to plasma is provided." ¹¹

1. Jones BA, Bekeris LG, Nakhleh RE, et al. Physician satisfaction with clinical laboratory services: a College of American Pathologists Q-probes study of 138 institutions. *Arch Pathol Lab Med*. 2009;133(1):38–43. doi: 10.1043/1543-2165-133.1.38.
2. Jones BA, Walsh MK, Ruby SG. Hospital nursing satisfaction with clinical laboratory services: a College of American Pathologists Q-Probes study of 162 institutions. *Arch Pathol Lab Med*. 2006;130(12):1756–61.
3. Akl P, Blick KE. A case of false-positive test results in a pregnant woman of unknown HIV status at delivery. *Lab Med*. 2014;45(3):259–63. doi: 10.1309/LMAAGVXK05LUWOQN.
4. Zweig MH, Glickman J, Csako G. Analytical interference caused by incompletely clotted serum specimens. *Clin Chem*. 1994;40(12):2325–6.
5. Nosanchuk JS, Combs B, Abbott G. False increases of troponin I attributable to incomplete separation of serum. *Clin Chem*. 1999;45(5):714.
6. Mannu GS, Bhalerao A. Unrecognized pseudohyperkalaemia in essential thrombocythaemia. *JRSM Short Rep*. 2011;2(11):85.
7. Nomura M, Nakasuji M, Nakamura M, Imanaka N, Tanaka M, Kawashima H. Pitfall in intraoperative electrolyte management for a patient with pseudohyperkalemia caused by thrombocytosis. *Masui*. 2009;58(10):1300–2.
8. Narayanan S, Guder WG. Preanalytical Variables and Their Influence on the Quality of Laboratory Results. *EJIFCC*. 2001;13(1):9–12.
9. Schlueter K, Nauck M, Petersmann A, Church S. Using BD Laboratory Consulting Services™ to understand the impact of the preanalytical phase on sample quality and safety, a multi country perspective. *Biochem Med (Zagreb)*. 2013;23(2):224.
10. Wissner D, van Ackern K, Knoll E, Wissner H, Bertsch T. Blood loss from laboratory tests. *Clin Chem*. 2003;49(10):1651–5.
11. Plebani M, Banfi G, Bernardini S, et al. Siero o plasma? Un quesito non nuovo che attende risposte nuove. *Biochim Clin*. 2018;42(4):277–351.

Venous blood sampling

Plasma analysis

Lithium Heparin/Sodium Heparin

BD Vacutainer® plasma tubes for clinical chemistry are available with spray-dried sodium heparin or lithium heparin additives. Heparin acts as an anticoagulant by creating a complex with antithrombin III. This complex inhibits thrombin and the activated factor X and thus prevents coagulation.

Optimal anticoagulation is achieved in these tubes by using 17 IU pharmaceutical-grade heparin per mL of blood. The lithium heparin in BD Vacutainer® tubes is spray dried onto the inner walls to achieve the best possible solubility. For clinical chemistry, lithium heparin is generally preferred over sodium heparin.

Tube mixing

To avoid micro-clotting, mix the BD Vacutainer® Heparin Tube with 8-10 inversions immediately after the blood sample has been taken.













Centrifugation conditions

≤ 1,300 g for 10 minutes at 18-25°C or 3000 g for 5 minutes¹

Further information

Clinical and technical information is available on request.

BD Vacutainer® Heparin Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
368494	2.0*	13 x 75	Lithium heparin	None	PET	Paper	BD Hemogard™	
368272	2.0*	13 x 75	Lithium heparin	None	PET	See thru	BD Hemogard™	
368884	4.0	13 x 75	Lithium heparin	None	PET	Paper	BD Hemogard™	
368496	4.0	13 x 75	Lithium heparin	None	PET	See thru	BD Hemogard™	
367869	4.0	13 x 75	Sodium Heparin	None	PET	Paper	BD Hemogard™	
368886	6.0	13 x 100	Lithium heparin	None	PET	Paper	BD Hemogard™	
368889	6.0	13 x 100	Lithium heparin	None	PET	See thru	BD Hemogard™	
367876	6.0	13 x 100	Sodium Heparin	None	PET	Paper	BD Hemogard™	
367526	10.0	16 x 100	Lithium heparin	None	PET	Paper	BD Hemogard™	
368480	10.0	16 x 100	Sodium Heparin	None	Glass	Paper	Conventional	

All tubes are supplied in boxes of 100 units / cases of 1,000

* Partial-draw tube

1. BD White Paper VS9387-OUS: Evaluation of Unified Centrifugation Conditions for a Range of BD Vacutainer® Blood Collection Tubes, 2018

Venous blood sampling

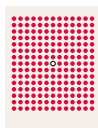
Plasma analysis

BD Vacutainer® Barricor™ Plasma Blood Collection Tubes

BD Vacutainer® Barricor™ is a revolutionary blood collection tube that delivers a consistently fast, clean and high-quality plasma sample to enable the most accurate results.

The design complements the BD Vacutainer® evacuated blood collection tubes, and continues the BD heritage of ensuring best practice in the collection, transportation and processing of blood samples.

BD Barricor™ product features have been designed to ensure optimal performance. The cutting-edge mechanical separator speeds up throughput and enables workflow optimisation by harnessing the power of plasma.



Accuracy

BD Barricor™ is an innovative technology that provides greater confidence in the accuracy of laboratory results across a broad range of analytes enabling clinicians to act on reliable and credible results to deliver cutting-edge care and service.

- Prolonged stability and reduced interference for enhanced therapeutic drug monitoring¹
- Longer stability of analytes versus current plasma gel separator tubes and reduced temperature sensitivity in storage



Quality

BD Barricor™ mechanical separator technology delivers a leading-edge collection and analytical process by eliminating separator artefacts that interfere with testing, or could lead to instrument downtime. This innovation helps deliver the highest diagnostic quality and patient care.

- Superior sample quality compared to plasma gel tubes – 47% fewer platelets count versus BD Vacutainer® PST™ II tubes³
- Positive impact on KPI such as haemolysis rate⁴



Fast diagnosis

BD Barricor™ delivers a faster time-to-result for all patients with no clotting time and a reduction in centrifugation time of up to 7 minutes.

- Separation in 3 minutes at 4000g²
- Reduction of turnaround time (TAT), allowing compliance with key performance indicators (KPI)



Efficiency

BD Barricor™ has been designed to ensure optimal performance across the sample and laboratory workflow, providing opportunities for improving the total cost of operations.

- Greater range of analytes can be tested in a single tube
- Eliminates the risk of gel contamination of the sampling probe; causing probe blockages, leading to analyser downtime and maintenance

1. Schropp A, Mory C, Duflet T, Pereira T, Imbert L, Lamoureux F. The right blood collection tube for therapeutic drug monitoring and toxicology screening procedures: Standard tubes, gel or mechanical separator? *Clin Chim Acta*. 2019;488:196–201.
2. BD White Paper VS9192: VS9192: Evaluation of Analyte Performance (including cell count, plasma yield, visuals) at Various Centrifugation Conditions, 2016.
3. BD White Paper VS9195: Evaluation of Specimen Quality in BD Vacutainer® Barricor™ Tubes with Respect to Visual Observations and Cell Counts in Plasma as Compared with BD Vacutainer® PST™ II Tubes, 2016.
4. Ramakers C. BD Vacutainer® Barricor tube in the emergency department: reduced hemolysis rates using partial draw tubes with reduced vacuum. *Clin Chem Lab Med*. 2018;56(2):e31–e32.

Venous blood sampling

Plasma analysis

Tube mixing

To avoid micro-clotting, mix the BD Vacutainer® Barricor™ tube with 8-10 inversions immediately after the blood sample has been taken.

Centrifugation conditions

4,000 g for 3 minutes

3,000 g for 5 minutes

2,500 g for 7 minutes

1,800 g for 10 minutes

For infectious disease testing, centrifuge at 3,000 g for 10 minutes¹.

See www.bd.com/ifu

Further information

BD Barricor™ is supported by a constantly growing knowledge base. As of August 2020 it includes:

- 32 peer-reviewed manuscripts
- 36 posters presented at international conferences
- 49 BD white papers

Ask your local BD representative for these and further technical information on BD Barricor™.

A series of webinars on BD Barricor™ and the enhancement that it brought to labs across Europe are available on this website:

<http://lp.bd.com/Barricor-webinars.html>

BD Vacutainer® Barricor™ Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
365050	3	13 x 75	Lithium heparin	Mechanical separator**	PET	Paper	BD Hemogard™	
365054	3	13 X 75	Lithium heparin	Mechanical separator**	PET	See thru	BD Hemogard™	
365053	3.5*	13 X 100	Lithium heparin	Mechanical separator**	PET	Paper	BD Hemogard™	
365049	4.5	13 x 100	Lithium heparin	Mechanical separator**	PET	Paper	BD Hemogard™	
365052	4.5	13 X 100	Lithium heparin	Mechanical separator**	PET	See thru	BD Hemogard™	
365081	5	13 X 100	Lithium heparin	Mechanical separator**	PET	See thru	BD Hemogard™	
365056	5.5	13 X 100	Lithium heparin	Mechanical separator**	PET	Paper	BD Hemogard™	
365057	5.5	13 X 100	Lithium heparin	Mechanical separator**	PET	See thru	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

* Partial-draw tube

** Mechanical separator: thermoplastic elastomer (TPE) and high-density polypropylene (HDPP)

1. BD White Paper VS9236: Comparison of BD Vacutainer® Barricor™ Tubes with BD Vacutainer® PST™ II, SST™ II and Serum Tubes for Selected Diagnostic Infectious Disease Marker Assays, 2016.

Venous blood sampling

Plasma analysis

BD Vacutainer® PST™ II Tubes

These tubes contain an inert gel barrier and spray-dried lithium heparin additive. The inert barrier separates the plasma from the blood cells during centrifugation, preventing contamination of the plasma. For example, in plasma certain analytes such as potassium, phosphorus and glucose should be separated from the cells within a few hours, otherwise the results will be significantly impacted. Using BD PST™ II tubes, routine analytes in clinical chemistry such as potassium are still stable after 24 hours storage at 2-8°C². Clinical evaluation of special chemistries such as therapeutic drugs, proteins, peptides, steroids and vitamins demonstrates a high degree of stability within BD PST™ II tubes¹⁻³.

BD Vacutainer® PST™ II tubes enable faster centrifugation times of 5 minutes at 3,000 g⁴.

The main advantages of gel tubes versus non-gel tubes are:

- Stable barrier between plasma and clotted blood during transportation and storage, therefore better analyte stability.
- Better sample quality.
- Workflow optimisation: short centrifugation time, sample processing and archiving in the primary tube.
- No requirement for secondary tubes, reducing the possibility of misidentification.



Effects of temperature

BD Vacutainer® PST™ II tubes should be stored at 4-25°C and protected from direct sunlight during storage. Cooling of the tube before or during centrifugation can affect the movement of the gel. The optimum separation of sediment and plasma is achieved at a temperature of 20-25°C.

Tube mixing

To avoid micro-clotting, mix the BD Vacutainer® PST™ II tube with 8-10 inversions immediately after the blood sample has been taken.






Centrifugation conditions

1,300-2,000 g for 10 minutes at 18-25°C
or alternatively, according to BD study VS 7513⁴
3,000 g for 5 minutes at 18-25°C

Further information

Clinical and technical information is available on request.

BD Vacutainer® PST™ II Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
367374	3.0	13 x 75	Lithium heparin	Gel	PET	Paper	BD Hemogard™	
368497	3.0	13 x 75	Lithium heparin	Gel	PET	See thru	BD Hemogard™	
367376	4.5	13 x 100	Lithium heparin	Gel	PET	Paper	BD Hemogard™	
366567	4.5	13 x 100	Lithium heparin	Gel	PET	See thru	BD Hemogard™	
367378	8.0	16 x 100	Lithium heparin	Gel	PET	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

1. BD White Paper VS5919: Comparison of BD Vacutainer® PST™ II Plastic Tubes to BD Vacutainer PST™ Plastic Tubes for 22 Routine Chemistry Analytes and 3 Cardiac (STAT) Analytes, 2003.

2. BD White Paper VS5925: Analyte Stability Supports Extended Use of Plasma Collected in BD Vacutainer PST™ II Plastic Tubes, 2001.

3. BD White Paper VS7597: A comparative evaluation of PST II with Lithium Heparin Plus and Serum Plus for selected hormones, therapeutic drugs, tumor markers and other chemistry analytes, 2008.

4. BD White Paper VS7513: Performance of BD Vacutainer® PST™ II PLUS Tubes at Four and Five Minute Centrifugation Times, 2002.

Venous blood sampling

Glucose analysis

Glucose and lactate determination

BD Vacutainer® glucose tubes are available in sodium fluoride/potassium oxalate, sodium fluoride/sodium EDTA or sodium fluoride/sodium heparin additive combinations.

Glucose values in unpreserved blood samples decrease quickly after collection as glucose is metabolised by the blood cells. The fluoride additive stops the enzymatic activity of the glycolytic pathway.

HbA1c determination

One advantage of the fluoride/EDTA tube over the fluoride/oxalate tube is that the HbA1c marker can be determined from the same tube, so there is no need to take an additional sample.

Tube mixing

To avoid micro-clotting, mix the BD Vacutainer® glucose tube with 8-10 inversions immediately after the blood sample has been taken.










Centrifugation conditions

≥ 1,300 g for 10 minutes at 18-25°C or 3000 g for 5 minutes for glucose analysis¹

Further information

Clinical and technical information is available on request.

BD Vacutainer® Tubes for glucose and lactate determination

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
368920	2.0*	13 x 75	Sodium fluoride (2.5 mg/mL) / Potassium oxalate (2.0 mg/mL)	None	PET	Block	BD Hemogard™	
368520	2.0*	13 x 75	Sodium fluoride (1.5 mg/mL) / Disodium EDTA (3.0 mg/mL)	None	PET	Block	BD Hemogard™	
367933	2.0*	13 x 75	Sodium fluoride (1.5 mg/mL) / Disodium EDTA (3.0 mg/mL)	None	PET	See thru	BD Hemogard™	
368921	4.0	13 x 75	Sodium fluoride (2.5 mg/mL) / Potassium oxalate (2.0 mg/mL)	None	PET	Paper	BD Hemogard™	
368521	4.0	13 x 75	Sodium fluoride (1.5 mg/mL) / Disodium EDTA (3.0 mg/mL)	None	PET	Block	BD Hemogard™	
367764	5.0	13 x 75	Sodium fluoride (4.0 mg/mL) / Sodium heparin (28I U/mL)	None	Glass	Paper	BD Hemogard™	
368201	5.0	13 x 100	Sodium fluoride (2.5 mg/mL) / Potassium oxalate (2.0 mg/mL)	None	PET	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

* Partial-draw tube

1. BD White Paper VS9387-OUS: Evaluation of Unified Centrifugation Conditions for a Range of BD Vacutainer® Blood Collection Tubes, 2018

Venous blood sampling

Haematology

EDTA

EDTA (ethylenediaminetetraacetic acid salts) are used to anticoagulate whole blood for haematological investigations, as the cellular components of the blood are particularly well preserved by EDTA. The anticoagulation is achieved by the EDTA forming complexes with metal ions such as calcium, therefore inhibiting the coagulation cascade. Anticoagulation with EDTA is irreversible.

The EDTA concentration in BD Vacutainer® tubes is 1.8 mg/mL of whole blood, as recommended by the International Council Society of Haematology (ICSH)¹. The ICSH recommends dipotassium EDTA salt (K₂EDTA) for haematological investigation. BD Vacutainer® plastic (PET) tubes are available with spray dried K₂EDTA and K₃EDTA.











Tube mixing

To avoid micro-clotting, mix the EDTA tube with 8-10 inversions immediately after the blood sample has been taken.

Further information

Clinical and technical information is available on request.

BD Vacutainer® K₂EDTA Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
368841	2.0*	13 x 75	K ₂ EDTA	None	PET	Paper	BD Hemogard™	
368274	2.0*	13 x 75	K ₂ EDTA	None	PET	See Thru	BD Hemogard™	
368856	3.0*	13 x 75	K ₂ EDTA	None	PET	Paper	BD Hemogard™	
368499	3.0*	13 x 75	K ₂ EDTA	None	PET	See Thru	BD Hemogard™	
368861	4.0	13 x 75	K ₂ EDTA	None	PET	Paper	BD Hemogard™	
367862	4.0	13 x 75	K ₂ EDTA	None	PET	See Thru	BD Hemogard™	
367864	6.0	13 x 100	K ₂ EDTA	None	PET	Paper	BD Hemogard™	
365900	6.0	13 x 100	K ₂ EDTA	None	PET	See Thru	BD Hemogard™	
367525	10.0	16 x 100	K ₂ EDTA	None	PET	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

* Partial-draw tube

1. Recommendations of the International Council for Standardization in Haematology for Ethylenediaminetetraacetic Acid Anticoagulation of Blood for Blood Cell Counting and Sizing. International Council for Standardization in Haematology: Expert Panel on Cytometry. *Am J Clin Pathol.* 1993;100(4):371–2.

Venous blood sampling

Haematology





EDTA-dependent pseudothrombocytopenia

Pseudothrombocytopenia (PCTP) is a rare phenomenon that occurs when auto-antibodies cause platelet clumping in whole blood stored in EDTA tubes.^{1,2} EDTA-induced platelet clumping results in false low platelet counts that may lead to an incorrect diagnosis of bleeding diathesis.^{1,2} Platelet clumps may also be mistaken for white blood cells and cause false high white blood cell counts.³

The simplest way to correct EDTA-dependent PCTP is by taking another blood sample and analysing it immediately, since platelet clumping increases over time.³ Another way to avoid this problem is by choosing another anticoagulant (e.g., citrate, theophylline, adenosine and dipyridamole (CTAD), acid citrate dextrose (ACD) or sodium citrate).⁴⁻⁷ When determining cell counts, please keep in mind that some anticoagulants dilute the blood.



BD Vacutainer® K₃ EDTA Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
367836	2.0*	13 x 75	K ₃ EDTA	None	PET	Block	BD Hemogard™	
368857	3.0*	13 x 75	K ₃ EDTA	None	PET	Block	BD Hemogard™	
368270	4.0	13 x 75	K ₃ EDTA	None	PET	See thru	BD Hemogard™	
368860	4.0	13 x 75	K ₃ EDTA	None	PET	Block	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

* Partial-draw tube

1. Bartels PC, Schoorl M, Lombarts AJ. Screening for EDTA-dependent deviations in platelet counts and abnormalities in platelet distribution histograms in pseudothrombocytopenia. *Scand J Clin Lab Invest.* 1997;57(7):629–36.
2. García Suárez J, Merino JL, Rodríguez M, Velasco A, Moreno MC. Pseudothrombocytopenia: incidence, causes and methods of detection. *Sangre (Barc).* 1991;36(3):197–200.
3. Solanki DL, Blackburn BC. Spurious leukocytosis and thrombocytopenia. A dual phenomenon caused by clumping of platelets in vitro. *JAMA.* 1983;250(18):2514–5.
4. Timoreau F, Gachard N. Constantes pré-analytiques en hémostase-cytologie. *Revue Française des Laboratoires.* 1999;317.
5. Lombarts AJ, de Kieviet W. Recognition and prevention of pseudothrombocytopenia and concomitant pseudoleukocytosis. *Am J Clin Pathol.* 1988;89(5):634–9.
6. Guder WG. Fokus Patientenprobe - Kompendium Präanalytik. Heidelberg: BD; 2006.
7. Lothar T. Labor und Diagnose - Indikation und Bewertung von Laborbefunden für die medizinische Diagnostik – Buch gebraucht kaufen. 5th ed. Frankfurt: TH-Books Verlagsgesellschaft; 1998.
7. Foresti V, Parisio E, Tronci M, Casati O, Zubani R, Pedretti D. EDTA-induced pseudothrombocytopenia. *Recenti Prog Med.* 1990;81(10):661–2.

Venous blood sampling

Speciality tubes




BD Vacutainer® Crossmatch Tubes

BD Vacutainer® Crossmatch tubes are available with either EDTA or clot activator additives. The BD Vacutainer® Crossmatch tube is identified by:

- a pink cap
- a large block label



BD Vacutainer® Crossmatch Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
366164	4.0	13 x 75	K ₂ EDTA	None	PET	Crossmatch	BD Hemogard™	
367941	6.0	13 x 100	K ₂ EDTA	None	PET	Crossmatch	BD Hemogard™	
368817	6.0	13 x 100	Silica (clot activator)	None	PET	Crossmatch	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

Blood group determination



The anticoagulant Acid Citrate Dextrose (ACD) is used for erythrocyte conservation. ACD is available in two solutions, A and B, each with different mixture ratios.

Anticoagulant	ACD solution A	ACD solution B
Na ₃ citrate	3.30 mg/mL	1.89 mg/mL
Citric acid	1.20 mg/mL	0.69 mg/mL
Dextrose	3.68 mg/mL	2.10 mg/mL
Potassium sorbate	0.03 mg/mL	0.03 mg/mL

The figures represent the final concentration in the blood in each case.



BD Vacutainer® Tubes for blood group determination

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
367756	6.0	13 x 100	ACD solution B	None	Glass	Paper	BD Hemogard™	
366645	8.5	16 x 100	ACD solution A	None	Glass	Paper	Conventional	

All tubes are supplied in boxes of 100 units / cases of 1,000

Venous blood sampling

Speciality tubes

Trace element determination

BD Vacutainer® tubes for trace element determination contain controlled amounts of specific elements for trace element analysis. Maximum concentrations are defined for the trace elements antimony, arsenic, lead, chromium, iron, cadmium, calcium, copper, magnesium, manganese, mercury, selenium and zinc that could be extracted by blood from the tube itself or the stopper.

Every production batch is checked and only released if the given maximum value is not exceeded. The values given take into account the use of a straight BD Blood Collection Needle.




BD Vacutainer® Trace Element Tube Contamination Upper Limits

Analyte	Glass µg/L	PET µg/L	Analyte	Glass µg/L	PET µg/L
Antimony	0.8	.*	Lead	2.5	0.3
Arsenic	1.0	0.2	Magnesium	60	40
Cadmium	0.6	0.1	Manganese	1.5	1.5
Calcium	400	150	Mercury**	-	3.0
Chromium	0.9	0.5	Selenium	-	0.6
Copper	8.0	5.0	Zinc	40	40
Iron	60	25			

* BD Vacutainer® trace element PET tubes should not be used for antimony testing.

** Water extraction analysed by cold vapour, all others ICP-MS

BD Vacutainer® Tubes for trace element determination

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
368380	6.0	13 x 100	Silica (clot activator)	None	PET	Paper	BD Hemogard™	
368381	6.0	13 x 100	K ₂ EDTA	None	PET	Paper	BD Hemogard™	
367735	7.0	13 x 100	Sodium heparin	None	Glass	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

BD Vacutainer® K₃EDTA/Aprotonin Tubes

BD Vacutainer® K₃EDTA tubes contain aprotonin, a protein stabiliser



Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
361017	5.0	13 x 75	Aprotonin (250 IU)/K ₃ EDTA	None	Glass	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

BD Vacutainer® EST Tubes

BD Vacutainer® EST tubes do not have any additives and are suitable as a secondary tube for anticoagulated blood samples, for example for taking plasma samples from blood bags. The BD Vacutainer® EST tube can also be used as a discard tube.

BD Vacutainer® EST Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
362725	3.0	13 x 75	No additive	None	PET	See thru	BD Hemogard™	
364917	11.0	16 x 100	No additive	None	PET	Paper	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

Venous blood sampling

Erythrocyte Sedimentation Rate (ESR) Tubes

BD Seditainer™ Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
366676	1.8	8 x 100	Sodium citrate (0.105 M)	None	Glass	Paper	Conventional	




BD Seditainer™ System

The BD Seditainer™ tubes are designed for ESR determination without using sedimentation pipettes. The blood is taken directly into the BD Seditainer™ tubes and mixed by inversion 8-10 times.

Immediately before the tubes are placed in the BD Seditainer™ Manual ESR Stand for measurement, the tubes must be mixed again. After the appropriate time has elapsed the results are read. The BD Seditainer™ Manual ESR Stand holds a maximum of 10 BD Seditainer™ tubes and has a height adjustable zero mark. The measurement results achieved correspond to the Westergren method.



BD Seditainer™ Manual ESR Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
367740	1.6	13 x 75	Sodium citrate (0.129 M)	None	Glass	Paper	BD Hemogard™	
366674	5.0	10.25 x 120	Sodium citrate (0.105 M)	None	Glass	Paper	BD Hemogard™	
366666	5.0	10.25 x 120	Sodium citrate (0.105 M)	None	Glass	Paper	Conventional	

All tubes are supplied in boxes of 100 units / cases of 1,000

BD Seditainer™ Stand

Cat. no.	Description	Quantity
366016	BD Seditainer™ manual ESR stand	1



Cell and biomarker preservation

BD Vacutainer® CPT™ Blood Collection Tubes

BD Vacutainer® CPT™ (Cell Preparation Tube)

The BD CPT™ containing FICOLL™* and separation gel is a one-step system that provides a simple method for isolating peripheral blood mononuclear cells (PBMCs) - lymphocytes and monocytes, from whole blood.

The tube provides a sample-to-yield solution, eliminating stages of blood transfer, preparation of FICOLL™ and manual gradient separation. Waiting time is significantly reduced as centrifugation can be carried out with the brakes enabled.

The tube can yield up to 1.3 million lymphocytes and monocytes per mL of whole blood with centrifugation times of 15 or 20 minutes. The BD CPT™ tube enables:

- Preparation and consistency
 - Standardised process when compared to manual FICOLL™ gradient separations
 - Reproducibility between sample preparations and technical operators
 - Less blood exposure for laboratory staff
- Faster separations
 - Blood draw to centrifuge - FICOLL™ is contained in the tube enabling fast gradient separation
 - Reduce waiting times during centrifugation with brakes enabled
- Post separation
 - The gel barrier provides clear cell separation and no aliquoting or additional tubes are required
 - Separated sample can be transported in BD CPT™ tube
 - Cells are stable in the BD CPT™ tube for up to 24 hours, depending on downstream application



The BD CPT™ tube is CE marked for *in vitro* diagnostic use.

Further information




Clinical and technical information is available on request.

Centrifugation conditions

Sodium Heparin 1,500-1,800 g for 15 minutes at 18-25°C

Sodium Citrate 1,500-1,800 g for 20 minutes at 18-25°C

BD Vacutainer® CPT™ Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
362781	4.0	13 x 100	Sodium citrate 0.45 mL 0.1 M/1.0 mL FICOLL™	Gel	Glass	Transparent	Conventional	
362782	8.0	16 x 125**	Sodium citrate 1.0 mL 0.1 M/2.0 mL FICOLL™	Gel	Glass	Transparent	Conventional	
362780	8.0	16 x 125**	Sodium heparin 132 USP Units in 1.0 mL PBS/2.0 mL FICOLL™	Gel	Glass	Transparent	Conventional	

All tubes are supplied in cases of 60 units

Available to buy online at www.bdbiosciences.com - search CPT

* FICOLL is a registered trademark of GE Healthcare Companies.

**Please note: These tubes are longer than conventional blood collection tubes. Please ensure that the tubes are free to swing when placing them into the centrifuge.

Cell and biomarker preservation

PAXgene® Blood ccfDNA Tube

PAXgene® Blood ccfDNA Tube

The PAXgene® Blood ccfDNA tube was developed by PreAnalytix, a joint venture between QIAGEN and BD.

The PAXgene® Blood ccfDNA tube is a plastic, evacuated tube intended for the collection, storage and transport of human blood and stabilisation of DNA. This tube is used to isolate circulating cell-free DNA (ccfDNA) from plasma and/or genomic DNA (gDNA) from a nucleated cellular fraction.

The PAXgene® blood ccfDNA tube ensures:

- Immediate stabilisation of ccfDNA and/or gDNA for the following duration and temperature ranges:¹
 - 10 days – whole blood at 2-25°C
 - 7 days – whole blood at 2-30°C
 - 3 days – whole blood at 2-37°C
- Analysis of methylated markers
A proprietary non-crosslinking stabilisation chemistry preserves ccfDNA without cross-linking challenges to optimise sensitivity and specificity for genetic biomarker downstream analysis*.
- ccfDNA & gDNA
Possible extraction from a single tube after centrifugation for parallel analyte analysis.
- Compatibility with NGS and qPCR quantification methods

- Workflow ease
Simplified centrifugation protocols with an optional second centrifugation at the same speed and force at 1,900 g for 15 minutes with medium brakes.

Performance characteristics established with 18S ribosomal and DYS14 Y-chromosomal ccfDNA fragments in plasma.

For more information please visit www.PreAnalytix.com

The PAXgene® blood ccfDNA tube is CE marked for in vitro diagnostic use.

Further information

Clinical and technical information is available on request.



PAXgene® Blood ccfDNA Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
768165	10	16 x 100	Proprietary	None	PET	Paper with 2D barcode	BD Hemogard™	

All tubes are supplied in cases of 100 units

*Users must validate use of product for their specific molecular diagnostic assay.

Cell and biomarker preservation

PAXgene® Blood RNA Tube

PAXgene® Blood RNA Tube

The PAXgene® Blood RNA tube was developed by PreAnalytiX, a joint venture between QIAGEN and BD.

The PAXgene® Blood RNA tube contains a proprietary reagent that immediately stabilises RNA. The PAXgene® Blood RNA tube ensures:

- Immediate stabilisation of cellular RNA in whole blood
The cellular RNA will be stable for: ¹
3 days – whole blood at room temperature (18-25°C)
5 days – refrigerated whole blood (2-8°C)
11 years – frozen whole blood (-20°C and -70°C)*
- RNA yield
The yield, dependent upon the sample and the RNA isolation kit, is $\geq 3 \mu\text{g}$ for > 95% of the samples (healthy subjects with a leukocyte count of $4.8 - 11 \times 10^6/\text{mL}$)
- RNA quality
The A_{260}/A_{280} ratio is 1.8-2.2 for 95% of all samples. Genomic DNA contamination is $\leq 1\%$ in $\geq 95\%$ of all samples



- Increased traceability
The PAXgene® Blood RNA tube has a human readable and 2D barcode label. Each tube has a unique identification code that can be associated to the patient blood specimen

For more information please visit www.PreAnalytiX.com.

The PAXgene™ blood RNA tube is CE marked for *in vitro* diagnostic use.

Further information

Clinical and technical information is available on request.



PAXgene® Blood RNA Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
762165	2.5	16 x 100	Proprietary	None	PET	Paper with 2D barcode	BD Hemogard™	

All tubes are supplied in cases of 100 units

Available to buy online at www.bdbiosciences.com - search PAXgene RNA

Immediately
stabilises
RNA

* Long-term study of blood storage in PAXgene Blood RNA Tubes is ongoing.

1. PreAnalytiX GmbH. (2020). PAXgene Blood RNA Tube (IVD). www.preanalytix.com. <https://www.preanalytix.com/products/blood/rna/-mirna/paxgene-blood-rna-tube-ivd/DE?cHash=de368141e724713e5c96db-b24e2b321d>

Cell and biomarker preservation

PAXgene® Blood DNA Tube

PAXgene® Blood DNA Tube

The PAXgene® Blood DNA tube was developed by PreAnalytiX, a joint venture between QIAGEN and BD.

The PAXgene® Blood DNA tube contains a proprietary EDTA formulation that immediately stabilises genomic DNA (gDNA). The PAXgene® Blood DNA tube ensures sufficient DNA quantity and quality for molecular diagnostic assays from whole blood.

Documented DNA stability and performance data

DNA samples purified from the 2.5 mL draw volume tube will have a ratio (A_{260}/A_{280}) of 1.7-1.9 and a DNA concentration of ≥ 12.5 ng DNA/ μ L eluate for 95% of samples and ensure DNA stability after blood collection for: ¹

- 14 days at room temperature (18-25°C)
- 28 days refrigerated (2-8°C)
- 3 days at 35°C

Increased traceability

The PAXgene® Blood DNA tube has a human readable and 2D barcode label. Each tube has a unique identification code that can be associated with the patient blood specimen.



For more information please visit www.PreAnalytix.com.

The PAXgene® blood DNA tube is CE marked for *in vitro* diagnostic use.

Further information

Clinical and technical information is available on request.



PAXgene® Blood DNA Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
761165	2.5	13 x 75	Proprietary	None	PET	Paper with 2D barcode	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

Available to buy online at www.bdbiosciences.com - search PAXgene DNA

1. PreAnalytiX GmbH. (2019). PAXgene Blood DNA Tube User Manual. <https://eifu.bd.com/>

Cell and biomarker preservation

BD Vacutainer® PPT™ Blood Collection Tubes

BD Vacutainer® PPT™ (Plasma Preparation Tube)

The BD Vacutainer® PPT™ Plasma Preparation Tube is used to separate undiluted plasma from whole blood for molecular diagnostic tests. These methods include, but are not limited to, polymerase chain reaction (PCR) or branched DNA (bDNA) amplification techniques. The BD Vacutainer® PPT™ tube is also applicable to other molecular diagnostic analyses where an undiluted plasma specimen is required. The BD Vacutainer® PPT™ tube ensures:

- Safe handling of infectious samples and no re-labelling
Plasma is prepared in the closed BD Vacutainer® tube that can be directly transported, eliminating the need for aliquoting from primary BD Vacutainer® tube to secondary container and re-labelling.
- Plasma quality is maintained
The gel barrier prevents plasma from coming in contact with blood cells. Viral load will be stable for: ^{1,2}
6 hours - whole blood at room temperature
24 hours - separated plasma at room temperature
5 days - separated plasma refrigerated at 4°C.

Plasma may be stored frozen in situ in the BD Vacutainer® PPT™ tube. However, freezing plasma in situ in BD Vacutainer® PPT™ tubes may be prohibited for some assays and the assay manufacturer's guidelines should be consulted.

The BD Vacutainer® PPT™ tube is CE marked for *in vitro* diagnostic use.





Further information

Clinical and technical information is available on request.

Centrifugation conditions

1,100 g for 10 minutes at 18-25°C

BD Vacutainer® PPT™ Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
362795	5.0	13 x 100	K ₂ EDTA	Gel	PET	See thru	BD Hemogard™	
362799	8.5	16 x 100	K ₂ EDTA	Gel	PET	See thru	BD Hemogard™	

All tubes are supplied in boxes of 100 units / cases of 1,000

Available to buy online at www.bdbiosciences.com - search PPT

1. Holodniy M, Rainen L, Herman S, Yen-Lieberman B. "Stability of Plasma HIV Viral Load in VACUTAINER® PPT™ Plasma Preparation Tubes During Overnight Shipment". J Clin Microbiol. 2000; 38(1):323-26.

2. Fernandes H, Ramanathan M, Morosyuk S, Do T, Rainen L. "Evaluation Of The Effect Of Specimen Handling Conditions In BD Vacutainer® PPT On The Stability Of HIV-1 Viral Load Using Roche Cobas® Ampliprep/ Cobas® Taqman® HIV-1 Test". 2010.

Cell and biomarker preservation

BD® P100 Tubes for stabilising proteins

The BD® P100 tube is a plasma protein preservation tube that contains K₂EDTA anticoagulant and a broad spectrum protease inhibitor cocktail optimised for human blood. The 8.5 ml BD® P100 tube also features a mechanical separator which provides high-quality plasma suitable for many downstream protein analysis platforms including mass spectrometry and immunoassays thanks to significant reduction in cellular contamination and increased stability of plasma proteins.

Centrifugation

For best sample quality, the centrifugation of the BD® P100 tube should be performed in a swing-out centrifuge as soon as possible after the blood sample has been collected. Use of a fixed 45° angle rotor is possible.

Optimum centrifugation conditions for a 8.5 mL tube:
2,500 g for 20 minutes

If 2,500 g cannot be achieved:
1,600 g for 30 minutes or
1,100 g for 30 minutes

Optimum centrifugation conditions for a 2.0 mL tube:
1,000 - 3,000 g for 10 minutes

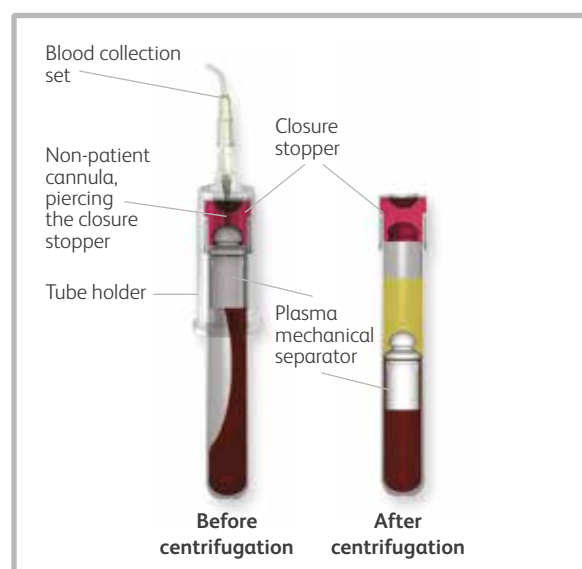


The BD® P100 plasma protein tube is for Research Use Only (RUO). Not for use in diagnostic procedures.



Further information

Clinical and technical information is available on request.

Mechanical plasma separator in a 8.5 mL tube



BD® P100 Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
366422	2.0	13 x 75	K ₂ EDTA/Protease inhibitor	None	PET	Paper	BD Hemogard™	
366448	8.5	16 x 100	K ₂ EDTA/Protease inhibitor	Mechanical separator*	PET	Paper	BD Hemogard™	

Tubes are supplied in cases of 20 (366422) and 24 (366448)

Available to buy online at www.bdbiosciences.com - search P100

* Mechanical separator: PET, TPE and LDPE

Cell and biomarker preservation

BD® P800 Tubes for measuring plasma metabolic markers

The BD® P800 tube contains a proprietary cocktail of protease, esterase and dipeptidyl peptidase IV (DPP-IV) inhibitors that immediately solubilises during blood collection. The BD® P800 tube provides preservation of the incretin peptides released during feeding - glucagon like peptide-1 (GLP-1), gastric inhibitory peptide (GIP), glucagon and oxyntomodulin (OXM)¹. The incretin peptides are associated with metabolic diseases, such as type 2 diabetes and obesity.

Centrifugation conditions

2.0 mL tubes: 1,100 -1,300 g for 10 minutes

8.5 mL tubes: 1,100 -1,300 g for 20 minutes

Further information

Clinical and technical information is available on request.

The BD® P800 tube is for Research Use Only (RUO). Not for use in diagnostic procedures.





Stability

The table below demonstrates the stability of the peptides as a half-life indicator, measured in hours at room temperature, in BD® P800 tubes, compared to BD Vacutainer® EDTA Tubes:

Peptides	T ½ EDTA (h)	T ½ P800 (h)
GLP-1 (G36A)	4-24*	> 96
GLP-1 (G37)	4-18	> 96
GIP (1-42)	5-20	> 96
OXM (1-37)	< 24	> 72
Glucagon	5-20	> 45

* Stable for up to 12 hours +/- 3 hours when EDTA tube is on ice.

BD® P800 Tubes

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Separator	Material	Label	Cap closure	Cap colour
366420	2.0	13 x 75	K ₂ EDTA/Protease, esterase and DPP-IV inhibitor	None	PET	Paper	BD Hemogard™	
366421	8.5	16 x 100	K ₂ EDTA/Protease, esterase and DPP-IV inhibitor	None	PET	Paper	BD Hemogard™	

All tubes are supplied in cases of 100

Available to buy online at www.bdbiosciences.com - search P800

Immediate
stabilisation
during blood
collection

1. Yi J, Warunek D, Craft D. Degradation and Stabilization of Peptide Hormones in Human Blood Specimens. *PLoS One*. 2015;10(7):e0134427.

Blood collection devices and accessories

Safety Blood Collection Sets

BD Vacutainer® UltraTouch™ Push Button Blood Collection Set

The BD Vacutainer® UltraTouch™ Push Button Blood Collection Set employs patented PentaPoint™ comfort 5-bevel needle technology. Studies have shown that this design helps reduce the chance of a painful injection by creating a flatter, thinner surface to help penetrate the skin with significantly greater ease.¹ This new safety device has been shown to reduce penetration forces by up to 32% when compared to another leading blood collection set.²

In addition, its exclusive BD RightGauge™, Ultra-Thin wall technology allows for better blood flow due to the needle's larger inner diameter. Therefore, clinicians can select a smaller gauge needle without sacrificing sample quality.

This technology can also improve tube fill time by up to 50% when using the same gauge (a standard 23-G needle vs the BD Vacutainer® UltraTouch™ Push Button Blood Collection Set).³

The BD Vacutainer® UltraTouch™ Push Button Blood Collection Set brings healthcare workers greater confidence and the ability to know they can use the needle gauge that is most appropriate for their patients, with improved efficiency.

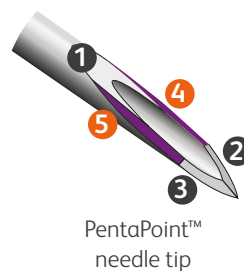
Further information

BD recommends for all needles without a pre-attached holder that a BD Vacutainer® One Use Holder is used.

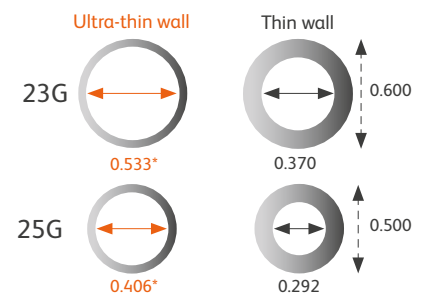
Clinical and technical information is available on request.



Comfort



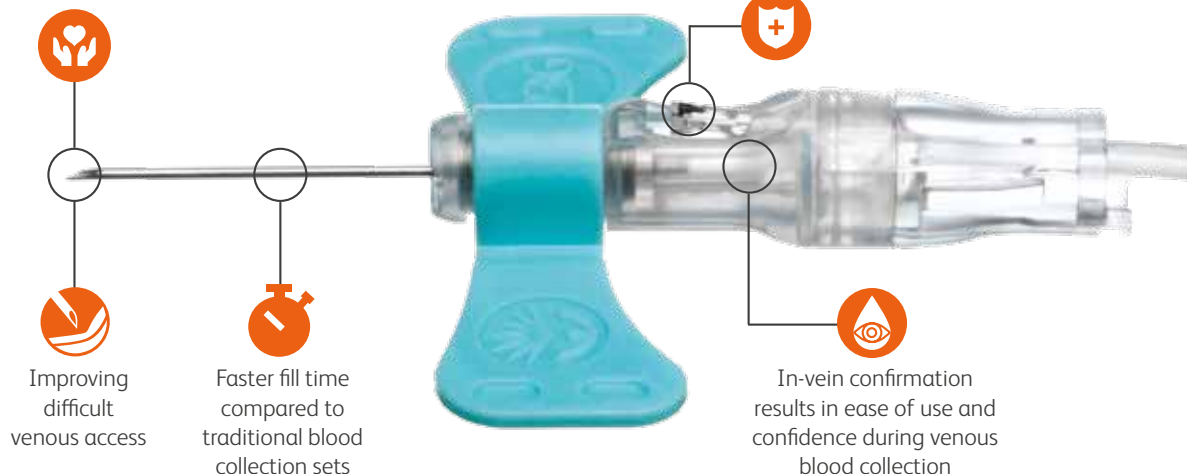
Speed



*These are nominal ID values.
All measurements are in mm.

The experience

Less pain compared to traditional blood collection sets



1. Hirsch L, Gibney M, Berube J, Manocchio J. Impact of a modified needle tip geometry on penetration force as well as acceptability, preference, and perceived pain in subjects with diabetes. *J Diabetes Sci Technol.* 2012;6(2):328–35.
2. Mouser A, Uettwiller-Geiger D, Plokhoy E, Berube J, Jha Ahuja A, Stankovic AK. Evaluation of Pain and Specimen Quality by Use of a Novel 25-Gauge Blood Collection Set With Ultra-thin Wall Cannula and 5-Bevel Tip Design. *J Appl Lab Med.* 2017;2(2):201–210.
3. BD White Paper VS9249: BD Vacutainer® Push Button Blood Collection Set Tube Fill Time, 2016.

Blood collection devices and accessories

Safety Blood Collection Sets

BD Vacutainer® UltraTouch™ Push Button Blood Collection Sets

Cat. no.	Size	Needle length	Length of tubing	With Luer adapter	Colour code	Box/Case
367393	21 G (0.8 mm)	19 mm	178 mm	Yes		50/200
367365	21 G (0.8 mm)	19 mm	305 mm	Yes		50/200
367392	23 G (0.6 mm)	19 mm	178 mm	Yes		50/200
367364	23 G (0.6 mm)	19 mm	305 mm	Yes		50/200
367391	25 G (0.5 mm)	19 mm	178 mm	Yes		50/200
367363	25 G (0.5 mm)	19 mm	305 mm	Yes		50/200

BD Vacutainer® UltraTouch™ Push Button Blood Collection Set with Pre-Attached Holder

With this safety blood collection set, the holder is already pre-attached, so it is not necessary to manually assemble the needle and holder. This ready-for-use blood collection set is individually packaged in a sterile blister.

This sterile closed system is ideally suited for taking of samples using the BD BACTEC™ blood culture bottles with improved fill rate¹.



BD Vacutainer® UltraTouch™ Push Button Blood Collection Sets with Pre-Attached Holder

Cat. no.	Size	Needle length	Length of tubing	Colour code	Box/Case
368686	21 G (0.8 mm)	19 mm	178 mm		20/100
368689	21 G (0.8 mm)	19 mm	305 mm		20/100
368685	23 G (0.6 mm)	19 mm	178 mm		20/100
368688	23 G (0.6 mm)	19 mm	305 mm		20/100
368684	25 G (0.5 mm)	19 mm	178 mm		20/100
368687	25 G (0.5 mm)	19 mm	305 mm		20/100

1. BD White Paper VS9381: Evaluation of Draw Volume, Fill Time and Fill Rate for BD BACTEC™ Blood Culture Bottles Using the BD Vacutainer® UltraTouch™ Push Button Blood Collection Set Compared to the BD Vacutainer® Push Button Blood Collection Set, 2019.

Blood collection devices and accessories

Safety Blood Collection Sets

BD Vacutainer® Push Button Blood Collection Set

The BD Vacutainer® Push Button Blood Collection Set with in-vein activation offers split-second protection against needlestick injuries.

- Indication of successful venepuncture:
When the vein has been successfully penetrated, blood flows immediately into the inspection chamber.
- Versatile:
For taking blood samples and for short-term infusions of up to 2 hours.
- Single-handed activation possible:
Activating the safety mechanism with one hand allows you to focus more attention on the patient and the venepuncture site.
- Protection against needlestick injuries:
When pressing the button, the needle is withdrawn straight from the vein and disappears permanently inside the housing of the blood collection set. This provides an extremely high level of protection¹.



Further information

BD recommends for all needles without a pre-attached holder that a BD Vacutainer® One Use Holder is used.

Clinical and technical information is available on request.

BD Vacutainer® Push Button Blood Collection Sets

Cat. no.	Size	Needle length	Length of tubing	With Luer adapter	Colour code	Box/Case
367338	21 G (0.8 mm)	19 mm	178 mm	Yes		50/200
367344	21 G (0.8 mm)	19 mm	305 mm	Yes		50/200
367326	21 G (0.8 mm)	19 mm	305 mm	No		50/200
367336	23 G (0.6 mm)	19 mm	178 mm	Yes		50/200
367342	23 G (0.6 mm)	19 mm	305 mm	Yes		50/200
367324	23 G (0.6 mm)	19 mm	305 mm	No		50/200
367335	25 G (0.5 mm)	19 mm	178 mm	Yes		50/200
367341	25 G (0.5 mm)	19 mm	305 mm	Yes		50/200
367323	25 G (0.5 mm)	19 mm	305 mm	No		50/200

1. Hotaling MA. retractable winged steel (butterfly) needle performance improvement project. *JT Comm Qual Patient Saf.* 2009;35(2):100–105.

Blood collection devices and accessories

Safety Blood Collection Sets

BD Vacutainer® Push Button Blood Collection Set with Pre-Attached Holder

With this safety blood collection set, the holder is already pre-attached, so it is not necessary to manually assemble the needle and holder. This ready-for-use blood collection set is individually packaged in a sterile blister.





This sterile closed system is ideally suited for taking of samples using the BD BACTEC™ blood culture bottles.

Further Information

Technical information is available on request.



BD Vacutainer® Push Button Blood Collection Sets with Pre-Attached Holder

Cat. no.	Size	Needle length	Length of tubing	Colour code	Box/Case
367355	21 G (0.8 mm)	19 mm	178 mm		20/100
368657	21 G (0.8 mm)	19 mm	305 mm		20/100
367354	23 G (0.6 mm)	19 mm	178 mm		20/100
368658	23 G (0.6 mm)	19 mm	305 mm		20/100

**Ready-
for-use**

blood
collection set

Blood collection devices and accessories

Safety Blood Collection Sets

BD Vacutainer® Safety-Lok™ Blood Collection Set

The BD Vacutainer® Safety-Lok™ Blood Collection Set for venous blood collection has a fully integrated safety shield, which once activated, protects against needlestick injuries.

- Indication of successful venepuncture:
When the vein has been successfully penetrated, blood can be seen in the device.
- Versatile:
For taking blood samples and for short-term infusions of up to 2 hours.
- Single-handed activation possible:
Activating the safety mechanism with one hand allows you to focus more attention on the patient and the venepuncture site.
- Protection against needlestick injuries:
Following successful venepuncture, the integrated safety shield is pushed over the needle, covering it completely, indicated by an audible click.



Further information

BD recommends for all needles without a pre-attached holder that a BD Vacutainer® One Use Holder is used.

Clinical and technical information is available on request.

BD Vacutainer® Safety-Lok™ Blood Collection Sets

Cat. no.	Size	Needle length	Length of tubing	With Luer adapter	Colour code	Box/Case
367282	21 G (0.8 mm)	19 mm	178 mm	Yes		50/200
367286	21 G (0.8 mm)	19 mm	305 mm	Yes		50/200
367246	21 G (0.8 mm)	19 mm	305 mm	No		50/200
367284	23 G (0.6 mm)	19 mm	178 mm	Yes		50/200
367288	23 G (0.6 mm)	19 mm	305 mm	Yes		50/200
367247	23 G (0.6 mm)	19 mm	305 mm	No		50/200
367295	25 G (0.5 mm)	19 mm	178 mm	Yes		50/200
368383	25 G (0.5 mm)	19 mm	305 mm	No		50/200

Blood collection devices and accessories

Safety Blood Collection Sets

BD Vacutainer® Safety-Lok™ Blood Collection Set with Pre-Attached Holder

With this safety blood collection set, the holder is already pre-attached, so it is not necessary to manually assemble the needle and holder. This ready-for-use blood collection set is individually packaged in a sterile blister.





The sterile closed system is ideally suited for the taking of samples using BD BACTEC™ blood culture bottles.

Further information

Technical information is available on request.



BD Vacutainer® Safety-Lok™ Blood Collection Sets with Pre-Attached Holder

Cat. no.	Size	Needle length	Length of tubing	Colour code	Box/Case
368654	21 G (0.8 mm)	19 mm	178 mm		25/200
368652	21 G (0.8 mm)	19 mm	305 mm		25/200
368655	23 G (0.6 mm)	19 mm	178 mm		25/200
368653	23 G (0.6 mm)	19 mm	305 mm		25/200

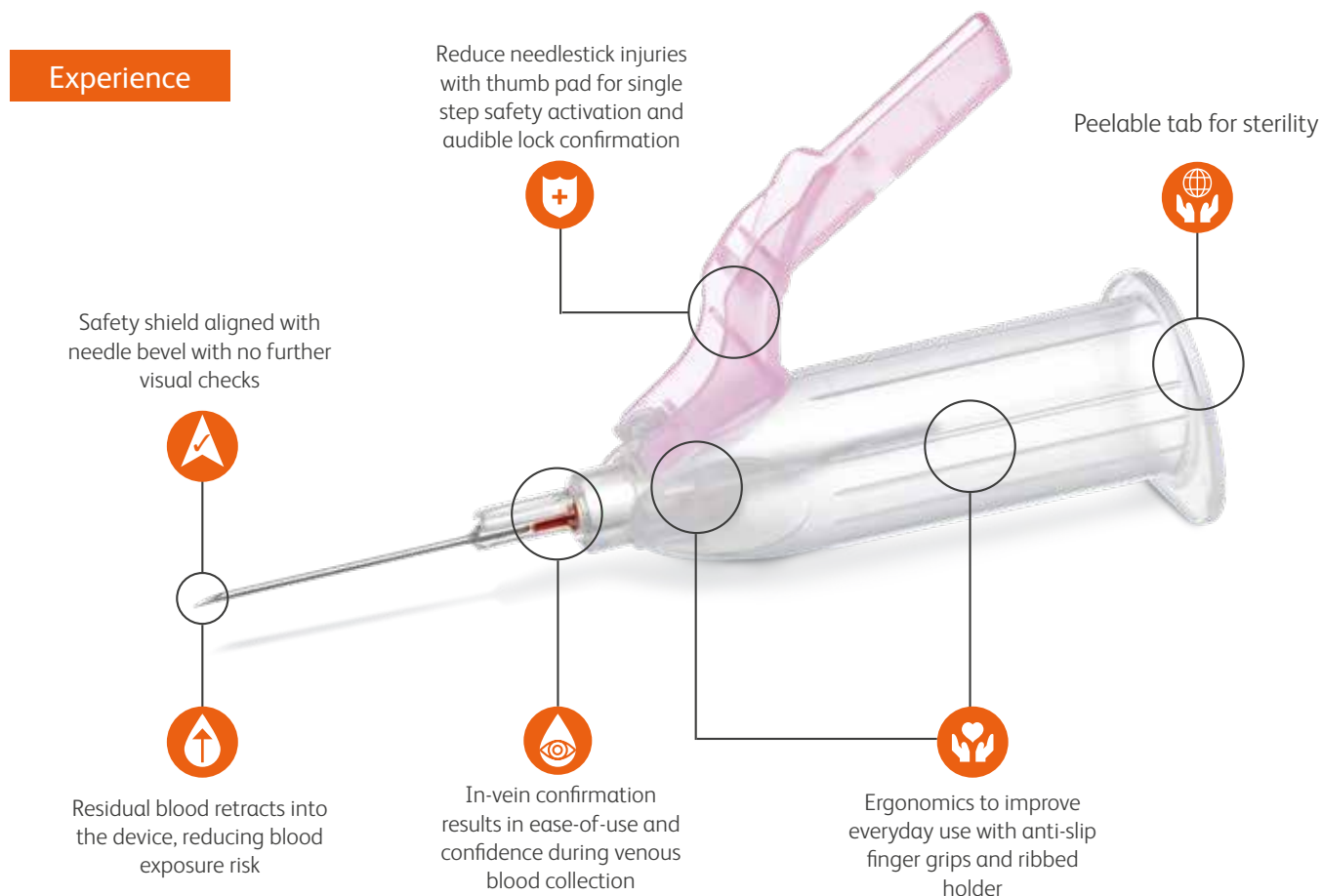
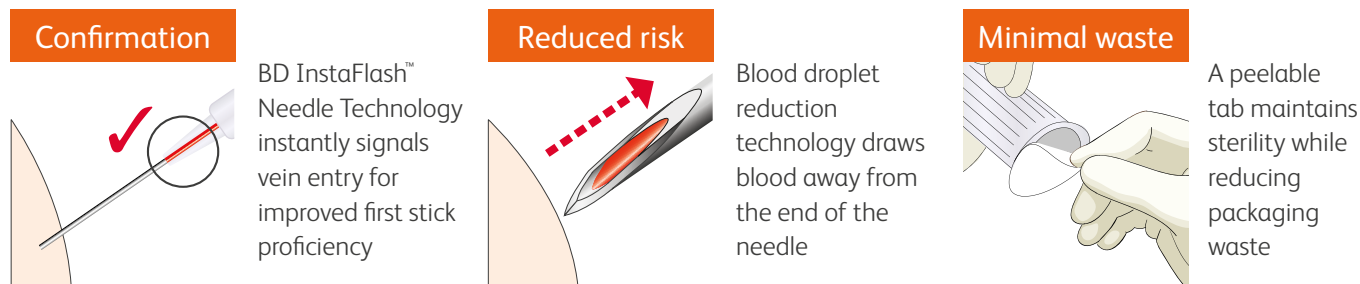
**Sterile
closed
system**

Blood collection devices and accessories

Safety Blood Collection Needles

BD Vacutainer® Eclipse™ Signal™ Blood Collection Needle with integrated holder

The BD Vacutainer® Eclipse™ Signal™ needle offers a combination of proven, robust safety technology with the additional benefit of in-vein confirmation built into an integrated ergonomic holder. This results in ease of use and confidence during venous blood collection, increasing both healthcare worker and patient safety.



Blood collection devices and accessories

Safety Blood Collection Needles



BD Vacutainer® Eclipse™ Signal™ Blood Collection Needles

Further information

BD recommends for all needles without a pre-attached holder that a BD Vacutainer® One Use Holder is used.



Clinical and technical information is available on request.



Cat. no.	Size	Needle length	Colour code	Box/Case
368837	21 G (0.8 mm)	25 mm		50/500
368838	22 G (0.7 mm)	25 mm		50/500



BD Vacutainer® Eclipse™ Signal™ Blood Collection Needles with integrated holder

Cat. no.	Size	Needle length	Colour code	Box/Case
368835	21 G (0.8 mm)	25 mm		50/400
368836	22 G (0.7 mm)	25 mm		50/400

Blood collection devices and accessories

Safety Blood Collection Needles

BD Vacutainer® Eclipse™ Blood Collection Needle

The BD Vacutainer® Eclipse™ safety needle for venous blood sampling has a fully integrated safety shield, which once activated, protects against needlestick injuries. This safety shield is an integral part of the needle and its orientation aligns with the needle bevel. The safety mechanism is designed for single-handed activation. The fully integrated safety shield engages over the needle with an audible click, irreversibly locking with a triple closure mechanism.



Further information

BD recommends for all needles without a pre-attached holder that a BD Vacutainer® One Use Holder is used.

Clinical and technical information is available on request.



BD Vacutainer® Eclipse™ Blood Collection Needles



Cat. no.	Size	Needle length	Colour code	Box/Case
368609	21 G (0.8 mm)	32 mm		48/480
368610	22 G (0.7 mm)	32 mm		48/480

BD Vacutainer® Eclipse™ Blood Collection Needle with Pre-Attached Holder

With this safety needle, the holder is already pre-attached, so it is not necessary to manually assemble the needle and holder. This ready-for-use blood sample needle and holder is individually packaged in a sterile blister.



BD Vacutainer® Eclipse™ Blood Collection Needles with Pre-Attached Holder

Cat. no.	Size	Needle length	Colour code	Box
368650	21 G (0.8 mm)	32 mm		100
368651	22 G (0.7 mm)	32 mm		100

Blood collection devices and accessories

Blood Collection Needles

BD Vacutainer® Multi-Sample Needles

BD Vacutainer® needles can be used for multiple tube samples. BD Vacutainer® needles are coated with silicone, a low friction lubricant, ensuring smooth vein entry.

BD Vacutainer® needles are available in 20, 21 or 22 gauge needle sizes.







Further information

BD recommends for all needles without a pre-attached holder that a BD Vacutainer® One Use Holder is used.

Clinical and technical information is available on request.





BD Vacutainer® Multi-Sample Needles

Cat. no.	Size	Needle length	Colour code	Box/Case
360215	20 G (0.9 mm)	38 mm		100/1,000
360214	20 G (0.9 mm)	25 mm		100/1,000
360213	21 G (0.8 mm)	38 mm		100/1,000
360212	21 G (0.8 mm)	25 mm		100/1,000
360211	22 G (0.7 mm)	38 mm		100/1,000
360210	22 G (0.7 mm)	25 mm		100/1,000

BD Vacutainer® Flashback Blood Collection Needles

The BD Vacutainer® flashback needle is built with the same quality as the multi-sample needle and includes in-vein confirmation.

Cat. no.	Size	Needle length	Colour code	Box/Case
301746	21 G (0.8 mm)	25 mm		50/1,000
301747	22 G (0.7 mm)	25 mm		50/1,000

Blood collection devices and accessories


Adapters and holders

BD Vacutainer® One Use Holder, BD Luer Adapters and Adapters with Pre-Attached Holders

- 1 The BD Vacutainer® Blood Transfer Device is a pre-assembled and easy-to-use device, designed with safety in mind. It is used for needle-less specimen transfer from a syringe to an evacuated tube or blood culture bottle and has a red colour-coded connection to provide easy differentiation from other holder-based products.
- 2 The BD Vacutainer® Luer-Lok™ Access Device is a pre-assembled multi-sample BD Luer-Lok™, compatible with female luer connections. It has a blue colour-coded connection to provide easy differentiation from other holder-based products.
- 3 The BD Vacutainer® One Use Holder is compatible with all BD Vacutainer® tubes and needles. The BD Vacutainer® One Use Holder is also compatible with the BD BACTEC™ blood culture bottle.
- 4 The BD Vacutainer® Luer Adapter is a sterile device to be used with the BD Vacutainer® One Use Holder. It is compatible with female luer connections, with a blue colour-coded cap to provide differentiation from other needles.



BD Vacutainer® Luer Adapter

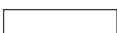
Cat. no.	Description	Colour code	Case
367300	BD Vacutainer® Luer adapter		100/1,000

BD Vacutainer® Luer Adapters with Pre-Attached Holders

These single-use products are ready-to-use, sterile, packed individually with a unique GS1 DataMatrix 2D bar code device identifier, in a strip of six units.

Cat. no.	Order. no.	Description	Case
364810	36481000	Blood Transfer Device (female luer)	198
364902	36490200	Luer-Lok™ Access Device (male luer)	198

BD Vacutainer® Needle Holders

Cat. no.	Description	Colour code	Case
364815	BD Vacutainer® One Use Holder is made of plastic and is compatible with tubes of 13 mm and 16 mm diameter and BD BACTEC™ blood culture bottles, transparent white		1,000

Other BD Vacutainer® Holders

Cat. no.	Description	Colour code	Case
364879	BD Vacutainer® multiple use plastic holder for tubes with 13mm and 16mm diameter and for BD Bactec™ blood culture bottles		1000
368872	BD Pronto™ Quick Release holder for tubes with 13mm and 16mm diameter and for BD Bactec™ blood culture bottles		100

Blood collection devices and accessories

Stretch tourniquets

BD Vacutainer® Stretch Tourniquet

The BD Vacutainer® Stretch Tourniquet is latex-free and scent-free. Using a single-use tourniquet minimises the risk of infection to healthcare workers and patients.

The BD Vacutainer® Stretch Tourniquet is packaged in an easy-to-use dispenser which is also convenient for storage.

Additional features include:

- Textured thermoplastic elastomer provides a better grip.
- High visibility colours to increase contrast and minimise the chances of tourniquets being left on the patient arm or being incorrectly disposed of.



BD Vacutainer® Stretch Tourniquets

Cat. no.	Description	Colour	Box/Case
367198	25 textured single-use, latex-free tourniquets in one packaging unit, perforated for separation.	Blue	25/500
367209	25 textured single-use, latex-free tourniquets in one packaging unit, perforated for separation.	Orange	25/500

DIFF-SAFE® Blood Dispenser

BD Vacutainer® Specimen Management offers DIFF-SAFE® Blood Dispenser for preparing blood slides from a blood collection tube.



Blood Dispenser

Cat. no.	Description	Case
366005	DIFF-SAFE®*	100/1,000

*DIFF-SAFE® is a registered trademark of Alpha Scientific Corporation

Capillary blood sampling

BD Microtainer® MAP Tubes

Process optimisation for capillary blood samples

BD Microtainer® MAP tubes are for collection, transport and processing of capillary blood from infants, children, geriatrics and emergency patients, whenever only the smallest amounts of blood are required.

The BD Microtainer® MAP tube for automated processing enables efficient workflow, both on the ward and in the laboratory.

- A capillary blood tube with standard blood collection tube dimensions (13 x 75 mm) and penetrable closure.
- Compatible with haematology analysers without the need for a tube adapter.
- Three clearly visible fill markings ensure the correct sample volume (250-500 µl).
- A standard label can be attached directly to the sample, minimising the risk of misidentification due to missing or incomplete labelling.




- Easy to open with twist-locking mechanism that ensures no leakage.
- Colour marking for identification of the type of sample and the correct positioning of the patient label.

Further information

Technical information is available on request.

BD Microtainer® MAP tube

Cat. no.	Description	Closure	Cap colour	Box/Case
363706	K ₂ EDTA tube for haematology with full size blood collection tube, dimensions 13 x 75 mm	BD Microgard™		50/200

Automated
processing
enables efficient
workflow

Capillary blood sampling

BD Microtainer® Tubes

BD Microtainer®

BD Microtainer® tubes are used to collect, transport and store skin puncture specimens for haematology tests, or for tests utilizing serum or heparinized plasma. Tubes are applicable to the general population, but are particularly used on infants, small children, geriatrics and critical care patients from whom venous blood specimens are particularly difficult to obtain or whenever only the smallest amounts of blood are required.

In order to ensure tube identification, the tubes are marked with the colour code that corresponds to the venous blood collection tubes. There are fill marks on the tubes that ensure the correct blood to additive ratio.

BD Microgard™ Closure

The special design of the BD Microgard™ safety closure substantially reduces blood splashing after the tube has been opened.

A larger diameter facilitates tube handling.









In combination with a tube extender, the BD Microtainer® tubes with BD Microgard™ closure fit into 13 x 75 mm racks.



Further information

Technical information is available on request.

BD Microtainer® Tubes with Microgard™ closure

Cat. no.	Description	Fill volume	Closure	Cap colour	Box/Case
365975	K ₂ EDTA tube for haematology	250-500 µl	BD Microgard™		50/200
365966	Plasma tube with lithium heparin	200-400 µl	BD Microgard™		50/200
365986	Plasma tube with separating gel and lithium heparin	400-600 µl	BD Microgard™		50/200
365988	Plasma tube with separating gel, lithium heparin and UV protection (amber tint for light-sensitive tests like bilirubin)	400-600 µl	BD Microgard™		50/200
365993	Glucose tube with sodium fluoride and sodium EDTA	400-600 µl	BD Microgard™		50/200
365968	Serum tube with separating gel and clot activator	400-600 µl	BD Microgard™		50/200
365979	Serum tube with separating gel and clot activator, with UV protection (amber tint for light-sensitive tests like bilirubin)	400-600 µl	BD Microgard™		50/200
365964	Serum tube without clot activator	250-500 µl	BD Microgard™		50/200
368933	BD Microtainer® tube extender for attachment to all BD Microtainer® tubes with BD Microgard™ closure (10 mm diameter)	n/a	n/a		n/a

Capillary blood sampling

Safety lancets




Capillary blood sampling with BD Microtainer® Contact-Activated Lancet

The ergonomic design of the single-use BD Microtainer® Contact-Activated safety Lancet enables it to be held securely and to locate the sampling point precisely. The lancet has been clinically demonstrated to minimise patient discomfort and maximise blood flow.^{1,2}

Its intuitive handling requires minimum training. The lancet is activated by being pressed onto the sampling location, minimising the influence of the user on puncture depth. The sharp point then retracts automatically into the housing.

This lancet is available in three sizes: for a single drop of blood, medium or large blood flow.

BD Microtainer® Contact-Activated Lancets

Cat. no.	Piercing width and depth	Lancet Type	Blood volume	Colour code	Box/Case
366592	30 G x 1.5 mm	Needle	One drop		200/2,000
366593	21 G x 1.8 mm	Needle	Medium blood flow		200/2,000
366594	1.5 mm x 2.0 mm	Blade	Large blood flow		200/2,000





Further information

Clinical and technical information is available on request.

BD Sentry™ Safety Lancet

A single-use safety lancet, available in two sizes. The lancet has an automatic needle retraction to protect healthcare workers from needlestick injuries and prevents re-use. It is designed with a V-shaped finger placement collar, natural-fit thumb pad and anti-slip ridges for more confident handling.

BD Sentry™ Safety Lancets

Cat. no.	Piercing width and depth	Lancet Type	Blood volume	Colour code	Box/Case
369528	28 G x 1.5 mm	Needle	One drop		100/2,000
369523	23 G x 1.8 mm	Needle	Medium blood flow		100/2,000



1. BD White Paper VS7499: A Comparison of BD Microtainer® Contact-Activated Lancet (Low Flow, purple) with BD Microtainer® Genie®, LifeScan OneTouch® SureSoft™ Gentle, and SurgiLance™ One-Step PLUS Safety lancets for Comfort, Ease of Use and Blood Volume, 2006.
2. BD White Paper VS7607: A Comparative Evaluation of the BD Microtainer® Contact-Activated Lancet (High Flow, Blue) with Other Market-leading Lancets for Blood Flow and Ease of Use during Finger Puncture Procedures, 2008.

Capillary blood sampling

Safety lancets

Capillary blood sampling with BD Microtainer® QuikHeel™ Lancet

The BD Microtainer® QuikHeel™ Lancet is a single-use, safety lancet designed for taking capillary blood samples from the heels of premature, new-born babies and infants. When the button is pressed, an extra-thin steel blade provides a fine, clean, surgical cut and ensures a good flow of blood. The penetration depth is pre-determined to protect against bone infections and cannot be altered. The permanently shielded blade excludes the possibility of injury or reuse.

The ergonomic design enables it to be held securely and the piercing point located precisely. The lancets are sterile and individually packed in blister packaging.



Further information

Technical information is available on request.

BD Microtainer® QuikHeel™ Lancets

Cat. no.	Description	Piercing depth	Piercing width	Lancet Type	Colour code	Box/Case
368102	Incision lancet for premature babies	0.85 mm	1.75 mm	Blade		50/200
368103	Incision lancet for newborn babies and infants	1.00 mm	2.50 mm	Blade		50/200



BD Critical Care Collection Syringes

Arterial Blood Collection Syringes

BD Critical Care Collection Syringes can be used to collect blood from a patient's artery or vein. All syringes contain spray-dried calcium-balanced lithium heparin that enables the specimen to be analysed for Arterial Blood Gases (ABGs) and a host of critical care analytes.

Further information

Clinical and technical information is available on request.

BD A-Line™ Arterial Blood Collection Syringes

BD A-Line™ syringes are used for blood collection by manual aspiration and are supplied without needles. They are designed to be used for arterial or venous blood collection from an arterial or IV line, and are available in 1mL and 3mL slip tip and 3mL BD Luer-Lok™ syringes.

BD A-line™ Arterial Blood Collection Syringes: Manual Aspirated Fill

Cat. no.	Syringe volume (mL)	Recommended fill volume (mL)	Units of heparin* (IU) (per syringe/per mL of blood**)	Gauge	Needle length	Connection	Tip cap
364356	1.0	0.6	30/50	-	-	Slip tip	Conventional
364376	3.0	1.6	80/50	-	-	Slip tip	Conventional
364378	3.0	1.6	80/50	-	-	BD Luer-Lok™	BD Hemogard™

Syringes supplied in cases of 100



BD Critical Care Collection Syringes

Arterial Blood Collection Syringes

BD Preset™ Eclipse™ Arterial Blood Collection Syringes

BD Critical Care Collection Syringes are available with the BD Eclipse™ safety-engineered needle, offering enhanced safety for the healthcare worker. The safety shield is integrated and is not an accessory to the needle. The needle bevel and safety shield are in alignment, ensuring no extra manipulation. The single-handed technique ensures no change in the collection technique and the double-locking mechanism is both visually and audibly confirmed for the healthcare worker.



Further information

Clinical and technical information is available on request.

BD Preset™ Eclipse™ Arterial Blood Collection Syringes: Self-Aspiration Fill

Cat. no.	Syringe volume (mL)	Recommended fill volume (mL)	Units of heparin* (IU) (per syringe/per mL of blood**)	Gauge	Needle length	Connection	Tip cap
364390	3.0	1.6	80/50	22G (0.7 mm) BD Eclipse™	1" (25 mm)	BD Luer-Lok™	BD Hemogard™
364389	3.0	1.6	80/50	22 G (0.7 mm) BD Eclipse™	1.25" (32 mm)	BD Luer-Lok™	BD Hemogard™
364391	3.0	1.6	80/50	23 G (0.6 mm) BD Eclipse™	1" (25 mm)	BD Luer-Lok™	BD Hemogard™
364393	3.0	1.6	80/50	25 G (0.5 mm) BD Eclipse™	5/8" (16 mm)	BD Luer-Lok™	BD Hemogard™

Syringes supplied in cases of 100

BD Preset™ Arterial Blood Collection Syringes

The BD Preset™ syringe plunger can be preset to the recommended volume. As arterial blood fills the syringe, the residual air is expelled through the self-venting membrane.

BD Preset™ Arterial Blood Collection Syringes: Self-Aspiration Fill

Cat. no.	Syringe volume (mL)	Recommended fill volume (mL)	Units of heparin* (IU) (per syringe/per mL of blood**)	Gauge	Needle length	Connection	Tip cap
364416	1.0	0.6	30/50	-	-	Slip tip	Conventional
364316	3.0	1.6	80/50	-	-	BD Luer-Lok™	BD Hemogard™
364413	1.0	0.6	30/50	23 G (0.6 mm)	1" (25 mm)	Slip tip	Conventional
364415	1.0	0.6	30/50	25 G (0.5 mm)	5/8" (16 mm)	Slip tip	Conventional
364314	3.0	1.6	80/50	22 G (0.7 mm)	1" (25 mm)	BD Luer-Lok™	Conventional
364327	3.0	1.6	80/50	23 G (0.6 mm)	1" (25 mm)	BD Luer-Lok™	BD Hemogard™

Syringes supplied in cases of 100

* Spray-dried, calcium-balanced lithium heparin

** At recommended fill volume

Urine collection products

BD Vacutainer® Urine Collection System

The BD Vacutainer® Urine Collection System is a closed system offering a range of solutions for collection, transport and preservation of urine samples to meet the needs of each patient according to their age, health and mobility.







BD offers a wide range of tube volumes for microbiology and urinalysis determinations, with or without preservatives. For microbiology determinations, BD offers a range of tube types with boric acid-based preservatives, all clinically validated to provide 48-hour specimen stability at room temperature.^{1,2,3}

BD collection devices include specimen cups, 24-hour 3 L containers and transfer straws for all patient collection methods.

Once the sample has been collected, the BD Vacutainer® evacuated urine tubes can be transported safely to the laboratory for analysis.



BD Vacutainer® Urine Tubes for Urinalysis

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Material	Label	Cap closure	Cap colour	Box/Case
368500	4.0	13 x 75	Without additive	PET	Paper	BD Hemogard™		100/1,000
368501	6.0	13 x 100	Without additive	PET	Paper	BD Hemogard™		100/1,000
365000	9.5	16 x 100*	Without additive	PET	Paper	BD Hemogard™		100/1,000
364915	11.0	16 x 100	Without additive	PET	Paper	BD Hemogard™		100/1,000
364917	11.0	16 x 100	Without additive	PET	Paper	BD Hemogard™		100/1,000
364938	10.0	16 x 100	Without additive	PET	Paper	Conventional		100/1,000

* With conical bottom

1. Kouri T, Vuotari L, Pohjavaara S, Laippala P. Preservation of urine for flow cytometric and visual microscopic testing. *Clin Chem.* 2002;48(6 Pt 1):900–5.

2. BD White Paper VS7097: Evaluation of BD Vacutainer® Urine Culture & Sensitivity PLUS Tube vs. Refrigerated BD Vacutainer® Non-Additive PLUS Tube for Microbiological Testing - Seeded Urine, 2003.

3. BD White Paper VS7099: Evaluation of BD Vacutainer® Urine Culture & Sensitivity PLUS Tube vs. BD Vacutainer® Urine Culture & Sensitivity Glass Tube for Microbiological Testing - Patient Urine, 2003.

Urine collection products

BD Vacutainer® Urine Tubes for Urinalysis with additives

The preservative allows for transport, testing and storage of the specimen up to 72 hours at room temperature

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Material	Label	Cap closure	Cap colour	Box/case
365017	8.0	16 x 100	Mercury-free stabiliser*	PET	Paper	BD Hemogard™		100/1,000
364992	8.0	16 x 100***	Mercury-free stabiliser*	PET	Paper	Conventional		100/1,000

BD Vacutainer® Urine Tubes for Microbiology

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Material	Label	Cap closure	Cap colour	Box/case
364958	4.0	13 x 75	Stabiliser**	PET	Paper	BD Hemogard™		100/1,000
364955	10.0	16 x 100	Stabiliser**	PET	Paper	BD Hemogard™		100/1,000

BD Vacutainer® Urine kits for Microbiology (Tube and Transfer Straw)

Cat. no.	Draw volume (mL)	Size (mm)	Additive	Material	Label	Cap closure	Cap colour	Box/case
364959	4.0	13 x 75	Stabiliser**	PET	Paper	BD Hemogard™		50/1,000
364944	10.0	16 x 100	Stabiliser**	PET	Paper	BD Hemogard™		50/1,000

* Contains Sodium Propionate, Ethyl Paraben and Chlorhexidine

** Stabiliser for microbiological investigations consisting of boric acid, sodium formate and sodium borate, up to 48-hour stabilisation of bacterial growth at room temperature.^{1,2,3}

*** With conical bottom

Urine collection products

BD Vacutainer® Urine Collection Containers and Transfer Units

Cat. no.	Description	Pack/case
364941	Polypropylene urine cup with screw closure and integrated transfer device, 120-mL capacity, sterile	100/200
364984	Coloured polypropylene 24-hour collection container for the protection of light sensitive analytes, with screw closure and integrated urine transfer device, 3,3-L capacity, with scale for volume checking, non-sterile	1/30
364940	Specimen transfer straw, non-sterile	100/1,000
364902*	BD Luer-Lok™ Access Device (male luer)	198

* Order number 36490200

The BD Luer-Lok™ Access Device enables transfer of a urine sample directly from a foley catheter to the tube. It enables fewer sample collection steps, less manipulation and reduced risk of contamination¹.

Further information

Clinical and technical information is available on request.



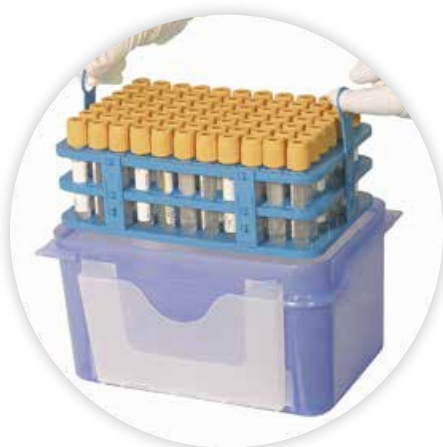
1. Wenger JE. Cultivating quality: reducing rates of catheter-associated urinary tract infection. *Am J Nurs*. 2010;110(8):40–5.

Transport

MoveBag and MoveBox system for interlaboratory transportation

The biological specimen transportation system ensures your laboratory complies with international regulations:

- ISO 15189
- International Carriage of Dangerous Goods by Road (ADR) 2011 including packaging instructions P650 for UN3373 products
- UNI EN 829/98 Pressure resistance test & Drop Test



Tube Racks and Absorbents

Cat No.	Description	Unit of sales
368705	Tube rack for 13mm tubes, fits 77 tubes	24 racks
368706	Tube rack for 16mm tubes, fits 77 tubes	24 racks
368711	Absorbent - size: 200 x 120 mm	100 pieces

MoveBox

Cat No.	Description	Unit of sales
368704	Box - Blue transparent	12 boxes
368702	MoveBox + tube rack for 13 mm tubes + 2 absorbants	12 boxes
368703	MoveBox + tube rack for 16 mm tubes + 2 absorbants	12 boxes

Transport

MoveBag

Cat No.	Description	Dimensions (external)	Unit of sales
366911	Isothermic MoveBag, for 2 Movebox, navy blue	305 x 210 x 270 mm	2 bags
368701	Isothermic MoveBag, for 4 Movebox, navy blue	390 x 280 x 270 mm	2 bags

MoveBox and MoveBag Kit

Cat No.	Description	Unit of sales
368700	MoveBag + 4 MoveBox with tube rack for 13mm tubes and 2 absorbants	2 kits



Example of how the MoveBag for Phlebotomists can be organized

All shown items are seperately available

MoveBag for Phlebotomists

Cat No.	Description	Dimensions (external)	Unit of sales
361581	Isothermic MoveBag, red, adjustable compartments	450 x 280 x 280 mm	1 bags

Temperature Packs

Cat No.	Description	Weight	Unit of sales
368707	Eutectic system to stabilize temperature at 22°	0.2 kg	12 units
368708	Eutectic system to stabilize temperature at 22°	1.1 kg	6 units
368709	Eutectic system to stabilize temperature at 4°	0.2 kg	12 units
368710	Eutectic system to stabilize temperature at 4°	1.1 kg	6 units

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Page 8-9

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6. Meyer S. Patient Safety. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/patient-safety>. Published September 13, 2019. Accessed September 14, 2020.
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Page 10-11

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2. Carraro P, Plebani M. Errors in a stat laboratory: types and frequencies 10 years later. *Clin Chem*. 2007;53(7):1338-1342.

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Product code index

PCN	Page	PCN	Page	PCN	Page	PCN	Page	PCN	Page
301746	53	365000	62	367300	54	368274	32	368856	32
301747	53	365017	63	367323	46	368380	35	368857	33
360210	53	365049	29	367324	46	368381	35	368860	33
360211	53	365050	29	367326	46	368383	48	368861	32
360212	53	365052	29	367335	46	368480	27	368872	54
360213	53	365053	29	367336	46	368492	22	368879	25
360214	53	365054	29	367338	46	368494	27	368884	27
360215	53	365056	29	367341	46	368496	27	368886	27
361017	35	365057	29	367342	46	368497	30	368889	27
361581	66	365081	29	367344	46	368498	25	368920	31
362725	35	365900	32	367354	47	368499	32	368921	31
362780	37	365904	22	367355	47	368500	62	368933	57
362781	37	365964	57	367363	45	368501	62	368965	25
362782	37	365966	57	367364	45	368520	31	368966	25
362795	41	365968	57	367365	45	368521	31	368967	25
362799	41	365975	57	367374	30	368609	52	368968	25
363046	21	365979	57	367376	30	368610	52	368969	25
363047	21	365986	57	367378	30	368650	52	368970	25
363048	21	365988	57	367391	45	368651	52	369032	22
363079	21	365993	57	367392	45	368652	49	369523	58
363097	21	366005	55	367393	45	368653	49	369528	58
363706	56	366016	36	367525	32	368654	49	442017	19
364305	21	366164	34	367526	27	368655	49	442020	19
364314	61	366420	43	367614	22	368657	47	442021	19
364316	61	366421	43	367624	22	368658	47	442022	19
364327	61	366422	42	367704	21	368684	45	442023	19
364356	60	366444	25	367714	21	368685	45	442027	19
364376	60	366448	42	367735	35	368686	45	442288	19
364378	60	366468	25	367740	36	368687	45	761165	40
364389	61	366566	25	367756	34	368688	45	762165	39
364390	61	366567	30	367764	31	368689	45	768165	38
364391	61	366575	21	367811	23	368700	66		
364393	61	366592	58	367819	22	368701	66		
364413	61	366593	58	367836	33	368702	65		
364415	61	366594	58	367862	32	368703	65		
364416	61	366644	25	367864	32	368704	65		
364810	54	366645	34	367869	27	368705	65		
364815	54	366666	36	367876	27	368706	65		
364879	54	366674	36	367896	22	368707	66		
364902	54, 64	366676	36	367933	31	368708	66		
364915	62	366882	25	367941	34	368709	66		
364917	35, 62	366911	66	367953	25	368710	66		
364938	62	367198	55	367955	25	368711	65		
364940	64	367209	55	367957	25	368774	23		
364941	64	367246	48	368102	59	368815	22		
364944	63	367247	48	368103	59	368817	34		
364955	63	367282	48	368201	31	368835	51		
364958	63	367284	48	368270	33	368836	51		
364959	63	367286	48	368271	22	368837	51		
364984	64	367288	48	368272	27	368838	51		
364992	63	367295	48	368273	21	368841	32		

BD Vacutainer® Blood Collection Tubes

Reliability of the effects of anticoagulants, stabilisers and additives

Anticoagulants, stabilisers and additives

BD Vacutainer® blood collection tubes come with different anticoagulants, stabilisers and additives depending on the type of diagnostic test required.

Anticoagulants

To keep blood samples from coagulating between collection and analysis, BD Vacutainer® blood collection tubes contain liquid or spray-dried anticoagulants that include: lithium heparin, sodium heparin, EDTA, sodium citrate and potassium oxalate.

Stabilisers

Sodium fluoride stabilises glucose and lactate in whole blood by inhibiting glycolysis. Tubes with a gel barrier ensure sample stability by keeping corpuscular blood components separate from serum or plasma. For superior separation performance, mechanical separators allow blood cells to flow to the lower part of BD Vacutainer® blood collection tubes and form a complete barrier at the end of centrifugation.

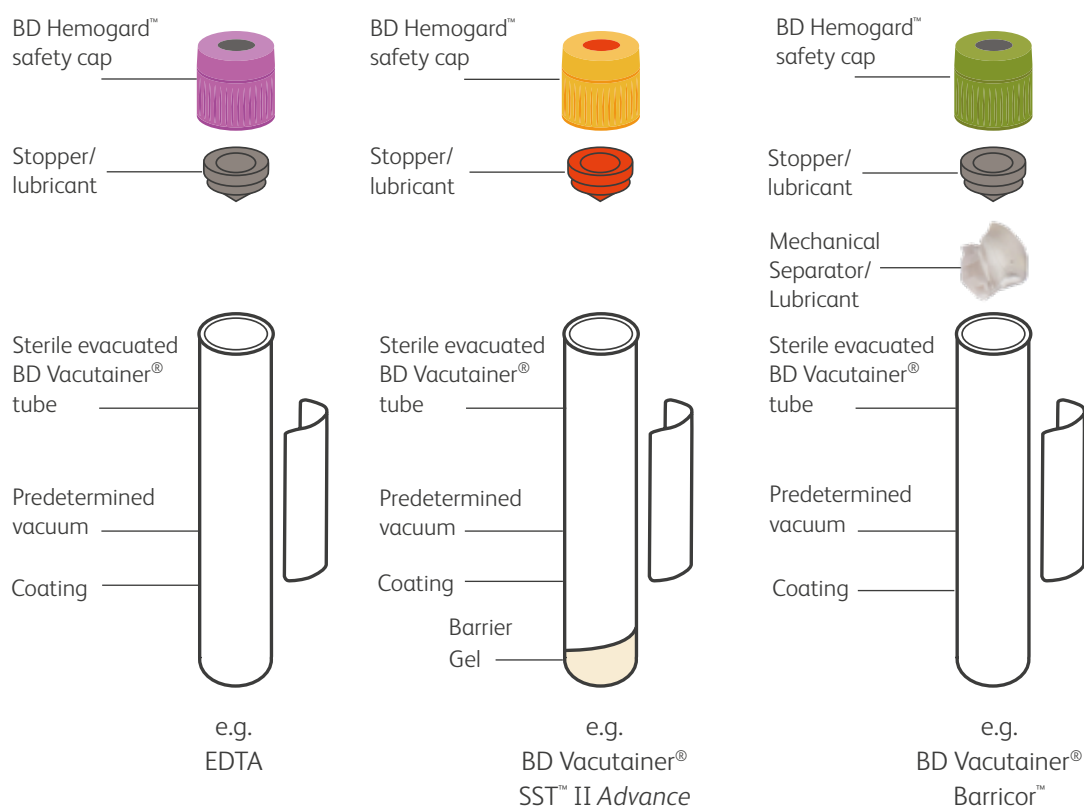
Additives

High-purity silica particles are added to some kinds of plastic blood collection tubes to trigger coagulation within an acceptable amount of time, so that you can obtain serum without altering the sample.

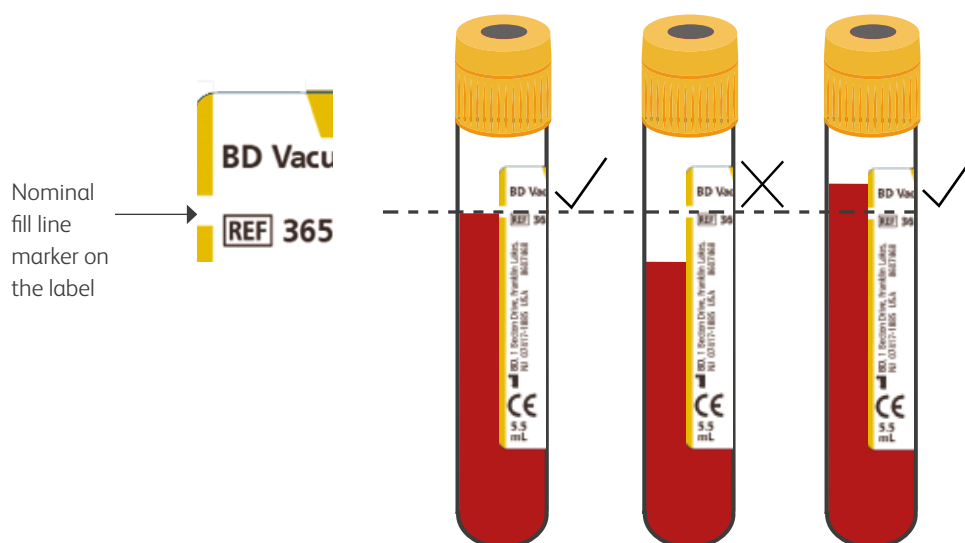


BD Vacutainer® Blood Collection Tubes

Tube build up



A correctly filled tube is important to maintain good sample quality



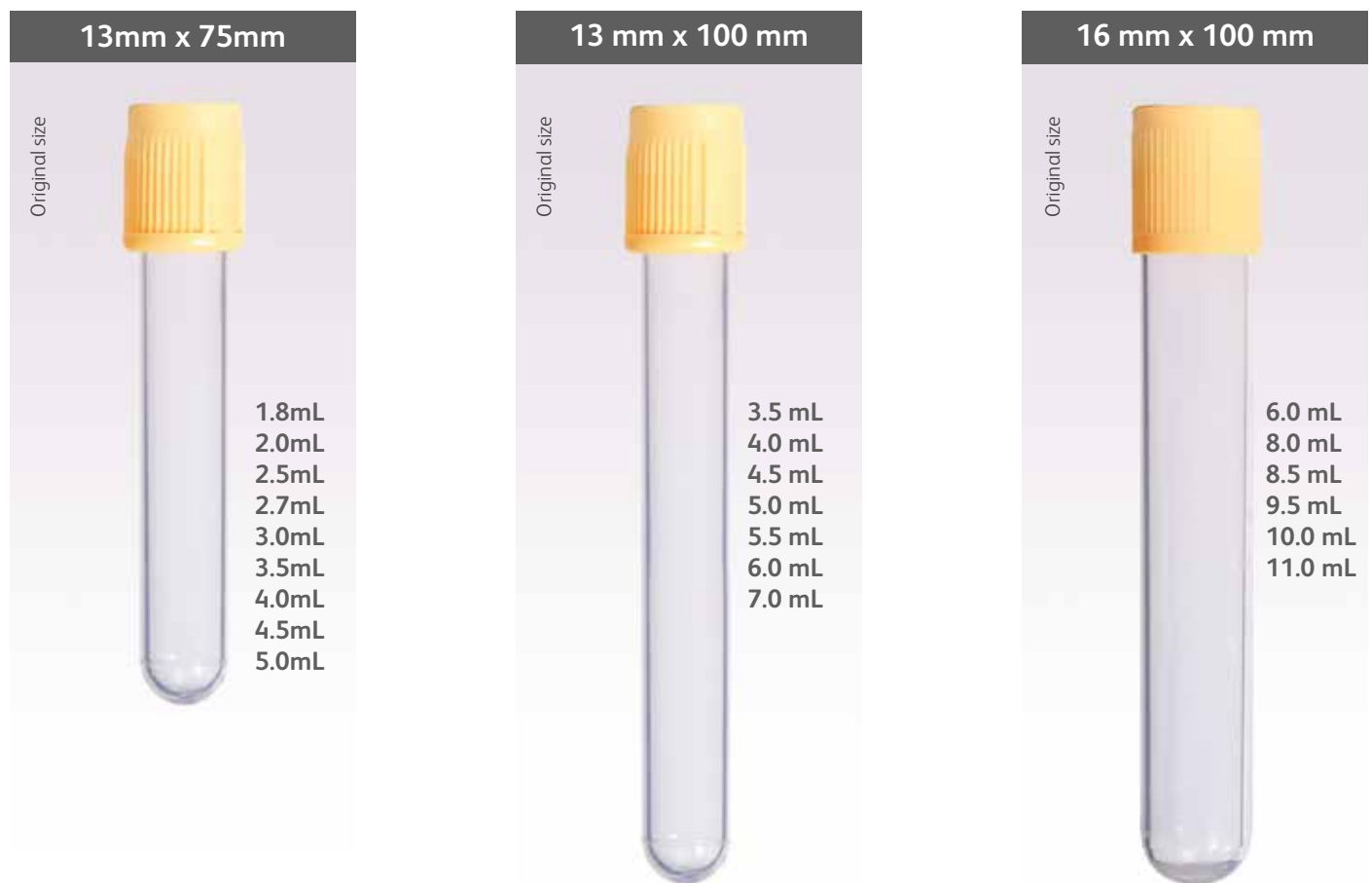
For more information about fill volume and fill marking, please see page 72.

BD Vacutainer® Blood Collection Tubes

Tube dimensions and sample volumes

BD Vacutainer® tubes are available in three different sizes as pictured below, each with different sample volumes. Tubes for special analysis may have a different size (e.g., *sedimentation tubes*).

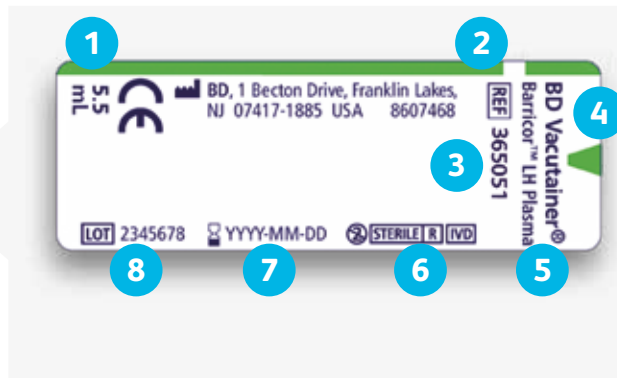
The volume given in mL on the tube refers to the amount of blood that will be taken from the patient. For tubes with a fluid additive, the final volume may deviate from this (i.e., *amount of blood + additive*).



BD Vacutainer® Blood Collection Tubes

Labelling and packaging information

Tube labelling



- 1 Fill volume
- 2 Fill marking
- 3 BD catalogue number
- 4 BD Vacutainer® notch label - colour coding and attachment point for secondary label
- 5 Type of tube and additive concentration (if applicable)
- 6 Sterilisation symbol
- 7 Expiry date
- 8 Batch number



Paper label

Patient data can be written directly onto the white surface of the standard label.



Block label

Paper label with form for patient data.



See thru

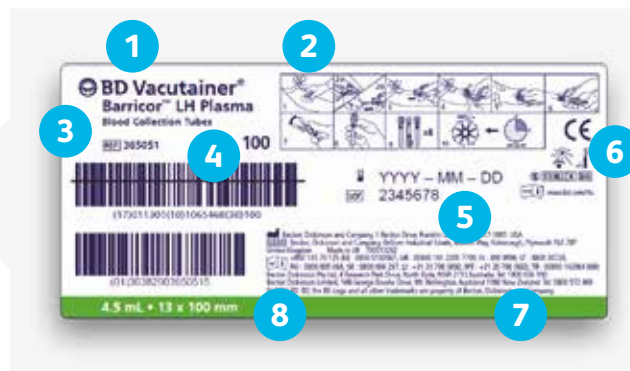
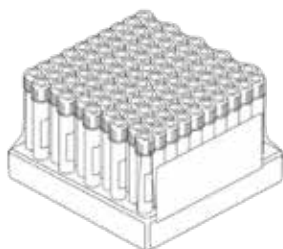
The product specifications are printed directly onto the tube and enable better visual inspection of the tubes.



Transparent label

Same format as the paper version but with the added advantage of making it easier to visually inspect the tube.

Shelf



- 1 Type of tube and additive concentration (if applicable)
- 2 Instructions for use as pictograms
- 3 BD catalogue number
- 4 Number of tubes in the box
- 5 Expiry date and batch number
- 6 Applicable symbols
- 7 Country of origin
- 8 Volume and size of the tubes






















Case



- 1 Type of tube and additive concentration (if applicable)
- 2 BD catalogue number
- 3 Number of tubes in the case
- 4 Applicable symbols
- 5 Country of origin
- 6 Volume and size of the tubes

Labelling is only for BD Barricor™ example.

Additional information

   The CE mark, signifying compliance with the European IVD MD Directive, 98/79/EC or the MD Directive 93/42/EEC. MD Class I transitioned to MDR Compliance.	
REF Catalogue number	LOT Batch code
 Use-by-date	 Do not re-use
STERILE  Sterilised using steam or dry heat	STERILE R Sterile fluid path. Sterilised by irradiation
STERILE R Sterilised using irradiation	STERILE EO Sterilised using ethylene oxide
 Keep away from sunlight (may show temperature range)	 Protect from any light source
 Fragile, handle with care	 Temperature limit
 This way up	 Can be recycled
 Date of manufacture	SN Serial number
 "Caution" - consult instructions for use for important cautionary information	 Keep dry
 Manufacturer	IVD <i>In vitro</i> diagnostic medical device
 Consult instructions for use	EC REP Authorised representative in the EU community
 Contains or presence of natural rubber latex	 Does not contain natural rubber latex
 The product is non-pyrogenic	 Do not use if packaging is damaged

K2E EDTA - dipotassium salt
K3E EDTA - tripotassium salt
N2E EDTA - disodium salt
9NC Trisodium citrate 9:1
4NC Trisodium citrate 4:1
FX Fluoride/Oxalate
FE Fluoride/EDTA
FH Fluoride/Heparin
LH Lithium heparin
NH Sodium heparin
Z None (no additive)

The abbreviations used in this catalogue have the following meanings:

PU = Packaging unit
 G = Gauge
 RT = Room temperature
 RCF = Relative centrifugal force
 g = g-number
 IVD = *in vitro* diagnostics

Additional information

Product quality statement

Product compliance

BD Vacutainer® Blood Collection Tubes are *In-Vitro* Diagnostic Medical Devices, non Annex II. These comply with the requirements described in the European *In Vitro* Diagnostic Medical Device Directive 98/79/EC.

BD Vacutainer® Multi-Sample Needles, **BD Vacutainer®** Flashback Needles, **BD Vacutainer® Eclipse™** Blood Collection Needles, **BD Vacutainer® Eclipse™ Signal™** Blood Collection Needles, **BD Vacutainer® UltraTouch™ Push Button** Blood Collection Sets, **BD Vacutainer® Push Button** Blood Collection Sets, **BD Safety-Lok™** Blood Collection Sets, **BD Microtainer® Contact-Activated Lancets**, **BD Sentry™** Safety lancet, **BD Microtainer® Quikheel™** Lancets and **BD Critical Care** Collection Syringes with needles are class IIa Medical Devices and as such, comply with the requirements of the European Medical Device Directive, 93/42/EEC.

All product unit labels and packaging levels bear the CE mark, demonstrating conformity to the above Directives.

The UK manufacturing plant, which supplies most European product, is certificated to ISO 13485 and ISO 14001. As a supplier to the U.S. market, the plant is also subject to FDA inspection and therefore holds an FDA establishment registration certificate. Copies of all these certificates can be provided upon request.

Other BD manufacturing plants carry similar certification, which can also be provided upon request.

All products are designed and manufactured in accordance with the relevant international and/or European standards.

The product shelf life is based on data from stability testing and varies according to specific products. All expiry dates are clearly printed on product unit labels.

Clinical data

Prior to launching a new product, BD conducts extensive clinical testing.

Whenever changing any manufacturer's blood collection tube type, size, handling, processing or storage condition for a particular laboratory assay, the laboratory personnel should review the manufacturer's tube specifications to establish/verify the reference range for a specific instrument/reagent system. Based on such information, the laboratory can then decide if a change is appropriate.

Product sterilisation

All products, where applicable, are sterilised using either gamma irradiation, ethylene oxide (EtO) or moist heat methods. Microbiological environmental assessment for bio-burden levels is conducted regularly.

The sterilisation of **BD Vacutainer®** products is controlled by European standards:

EN ISO 11135	Sterilization of health care products -- Ethylene oxide -- Part 1: Requirements for development, validation and routine control of a sterilization process for medical devices
EN ISO 11137	Sterilization of health care products -- Radiation -- Part 1: Requirements for development, validation and routine control of a sterilization process for medical devices
EN ISO 17665	Sterilization of health care products -- Moist heat -- Part 1: Requirements for the development, validation and routine control of a sterilization process for medical devices
EN 556	Requirement for terminally sterilised devices to be labelled "STERILE"
ISO 11737-1:2006	Sterilization of medical devices - Microbiological methods - Part 1: Determination of a population of microorganisms on products
ISO 11737-2:2009	Sterilization of medical devices - Microbiological methods - Part 2: Tests of sterility performed in the definition, validation and maintenance of a sterilization process

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